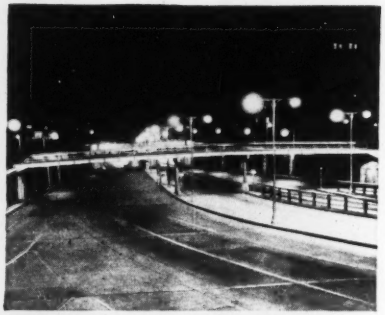
ENGINEERING NEWS-RECORD

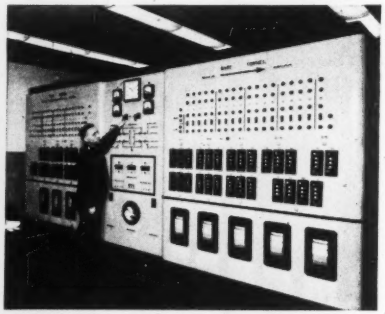
A McGRAW-HILL PUBLICATION

ENGINEERING REPORTS:

CONTINUOUS-LINE FLUORESCENT LIGHTING—key feature of Brooklyn-Battery electrical system—gives safer, shadowless illumination. Variable light intensity and lower operating costs are other important features.



WELL-LIGHTED APPROACHES lead to tunnel. In daytime, lighting inside the entrance is brighter to provide better transition from sunlight.



CENTRALIZED CONTROL permits one man to operate the complete electrical system—lights, fans, pumps and safety equipment.

Ribbons of light mean safer, lower-cost tunnel operation

Fluorescent lighting, central control, reliable power highlight G-E system at Brooklyn-Battery Tunnel

Now handling 16,000,000 vehicles a year with safety, comfort, and operating economy, New York's Brooklyn-Battery Tunnel provides an excellent example of modern tunnel electrical systems. Designed by engineers of the Triborough Bridge and Tunnel Authority and General Electric, this electrical system was the first to feature economical, variable-intensity fluorescent lighting. Centralized control and a coordinated power distribution system also contribute to operating economy and dependability.

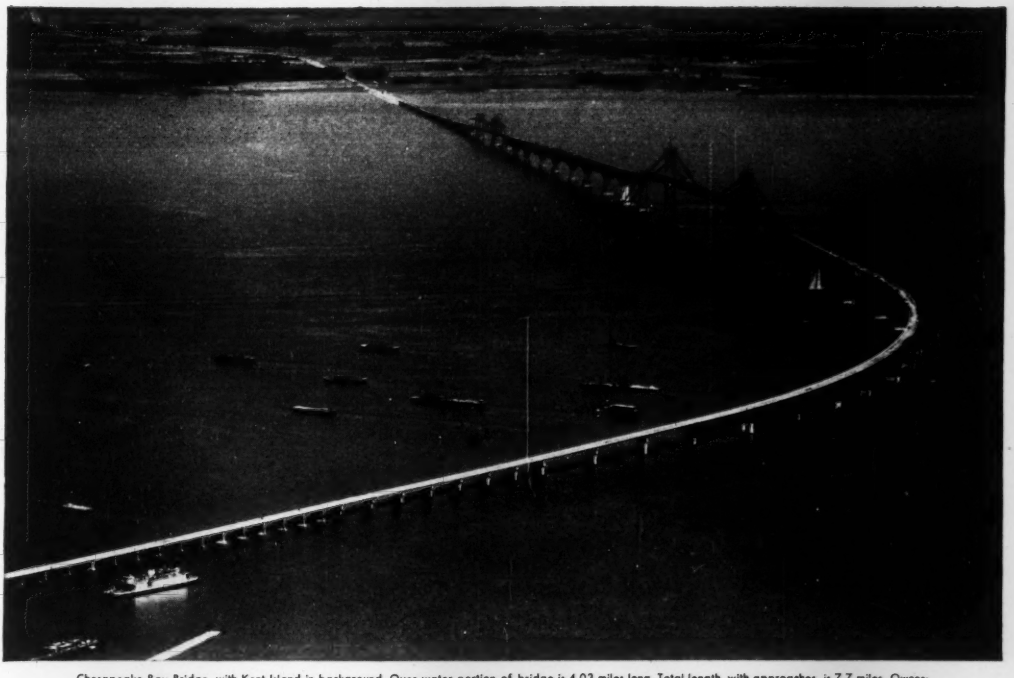
Tunnels are just one of the many types of heavy construction projects on which General Electric is ready to assist your engineers or consultants in electrical system planning. Contact your local G-E Apparatus Sales Office. General Electric Co., Schenectady 5, N. Y.

664-24

RELIABLE POWER—a necessity for tunnels—is provided by G-E metal-clad switchgear. G.E. also builds fan and pump drives for tunnels.

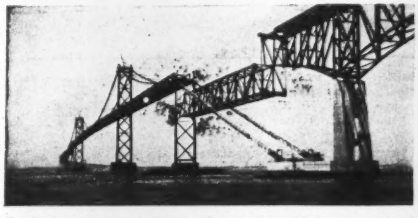
Engineered Electrical Systems for Heavy Construction

GENERAL ELECTRIC



Chesapeake Bay Bridge, with Kent Island in background. Over-water portion of bridge is 4.03 miles long. Total length, with approaches, is 7.7 miles. Owner: Maryland State Roads Commission. *Designers and Supervising Engineers:* J. E. Greiner Co. *Fabricator and Erector of Superstructure:* Bethlehem Steel Company.

One of the spans being floated from erection point to final location. It is supported by falsework resting on one of the permanent simple truss spans which serves as additional falsework.



The final simple suspended span goes into place, lifted by four sets of falls. This same span was used as part of the falsework when other spans, like the one above, were floated into position.

4-Mile Bridge Crosses CHESAPEAKE BAY

This is the Chesapeake Bay Bridge, third longest bridge in the world, and the first ever to span Chesapeake Bay. The majestic 21,286-ft steel structure, located about 25 miles south of Baltimore, connects Sandy Point, near Annapolis, with Kent Island, Md. By linking the famous Del-Mar-Va peninsula to the mainland, it becomes a vital segment of the growing system of express highways along the eastern seaboard.

With its approaches, the 2-lane Chesapeake Bay Bridge is more than 7 miles long. It consists of 123 spans, ranging from 60-ft simple-beam spans to a suspension-bridge span which is 1600 ft from center-to-center of the main towers. The bridge includes deck girder spans, deck truss spans, deck cantilevers, and a through cantilever spanning 780 ft over a secondary ship channel.

The first span erected was a 300-ft simple-truss deck span, located about a mile from the western shore. It was built on falsework bents adjacent to the permanent piers, and was then floated over the piers into position. During construction the span served as a permanent dock for the erecting and floating of other spans.

Throughout most of the bridge, span supports are rocker bents on low two-shaft piers, alternating with braced towers on low four-shaft piers. From each abutment the bridge deck rises approximately 175 ft to meet the suspension span. The maximum grade is 3 per cent.

The 30,000-ton superstructure for the Chesapeake Bay Bridge was fabricated and erected by Bethlehem.

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ENGINEERING NEWS-RECORD

ABP Member

Volume 149 October 2, 1952 No. 14

WALDO G. BOWMAN
Editor

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VOL. 1

Mobile Equipment News

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NO. 1

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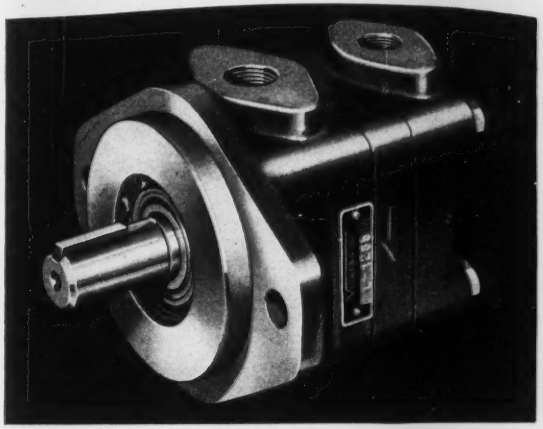

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The two internal outlet ports are diametrically opposite each other. The same is true of the inlet ports. Thus equal and opposite thrust loads eliminate bearing loads due to pressure. Lighter bearing loads mean much longer bearing and pump life.

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Radial compensation for wear is in the vanes. The vanes slide freely in the slots and are moved out into contact with the cam ring by centrifugal force . . . then held there by hydraulic pressure as it builds up. As normal wear occurs, the vanes just move further out in the slots to compensate. (Wear is minimized because all parts are lubricated by the oil under pressure.)

Axial compensation is by means of a pressure plate held to correct running clearance by pressure from the system. It automatically moves in to compensate as wear occurs.

Automatic compensation eliminates need for "run in" . . . efficiency is maximum the first time the pump is started. It also assures maximum delivery over a very long life, with none of the gradual falling off encountered where there is no wear compensation.

V-100 PUMPS AVAILABLE IN 3 CAPACITIES

The Series V-100 Pump is available in three capacities: 1.5, 2.5, and 3.5 gpm at 1200 RPM and 0 outlet pressure. This choice of three capacities with same exterior dimensions facilitates matching pump to the job.

Ask for Installation Drawing No. 152060.

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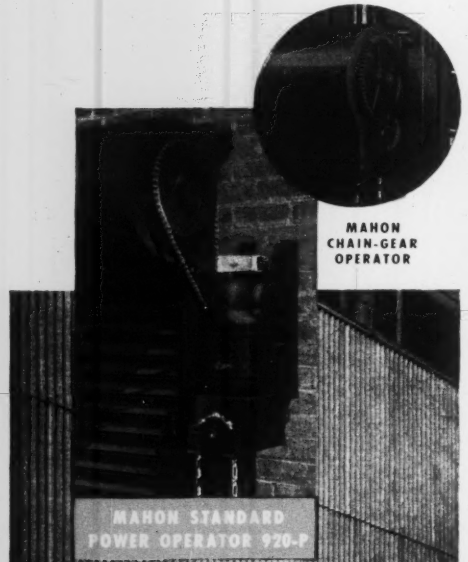

Illustrated below you see six Mahon Power Operated Rolling Steel Doors installed in the openings of a combination truck and rail shipping dock. The power operators are located inside with through-the-wall drives. A continuous hood over the roller shafts and operating mechanisms extends the entire length of the six truck openings. This is another typical installation where no other type of door would serve the purpose—because, the vertical roll-up action of a Rolling Steel Door eliminates overhead obstructions—occupies no usable space inside or outside the opening. All-metal construction provides permanence, greater security, and assures you a lifetime of trouble-free service. When you select Rolling Steel Doors, it will pay you to compare both specifications and price tags . . . you will find that the hot-dipped galvanized curtain slat material that goes into Mahon Rolling Steel Doors is chemically cleaned, phosphated and treated with a chromic acid solution to provide paint bond, and that the protective coating of synthetic enamel is baked on at 350° F. prior to roll-forming. This is just one of the extra value features of Mahon Rolling Steel Doors. See Sweet's Files for complete information including Specifications, or write for Catalog G-53.

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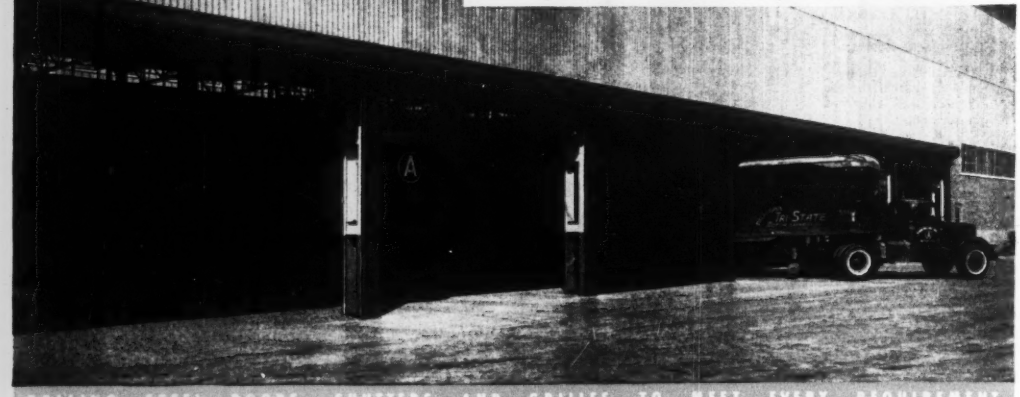
Manufacturers of Rolling Steel Doors, Grilles, and Automatic Closing Underwriters' Labeled Rolling Steel Doors and Fire Shutters; Insulated Metal Walls and Wall Panels; Steel Deck for Roofs, Partitions, and Permanent Concrete Floor Forms.

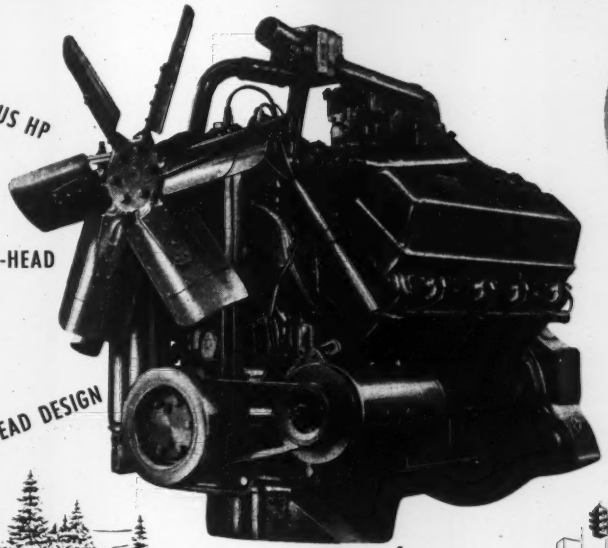


ROLLING STEEL DOORS, SHUTTERS AND GRILLES TO MEET EVERY REQUIREMENT

Six Mahon Power Operated Rolling Steel Doors 18'-7" x 14'-0" installed in a new building built by the Austin Company for the Albion Malleable Iron Works, Albion, Michigan. Another Mahon Power Operated Door 17'-0" x 22'-0" is installed in a railroad opening in the end of this enclosed loading dock.

MAHON

Now! A heavy-duty Autocar powered by the



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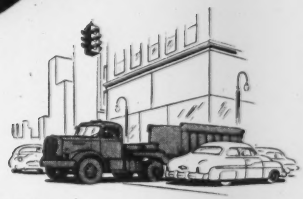
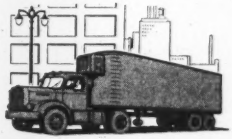
A great valve-in-head V-8 engine for heavy-duty highway hauling. Made by the Le Roi Company, manufacturers of V-type internal combustion engines for over a quarter of a century.

SMOOTH OPERATION. Eight cylinders, short stroke, five big main bearings give this engine great smoothness whether you're idling along in traffic or high-balling on a super highway.



FLEXIBILITY. In traffic or out on the open road, the Autocar Le Roi V-8 is instantly responsive to the driver's wishes. High-performance engine packs a wallop throughout its range.



FULL POWER AND ACCELERATION. Modern carburetion, valve-in-head V-8 design, aluminum pistons, light flywheel deliver full power and acceleration. The Autocar Le Roi V-8 has extra power for quick getaways or in emergencies.

ECONOMY. Good fuel economy under load and at road speeds is an outstanding advantage of the high-performance engine. Throughout its design, the Autocar Le Roi V-8 is keyed to the needs of the profit-minded hauler.

CHECK! If you can't see this modern engine in its new low-weight Autocar chassis at your nearest Autocar Branch, send for this colorful booklet. Fill in the coupon today.

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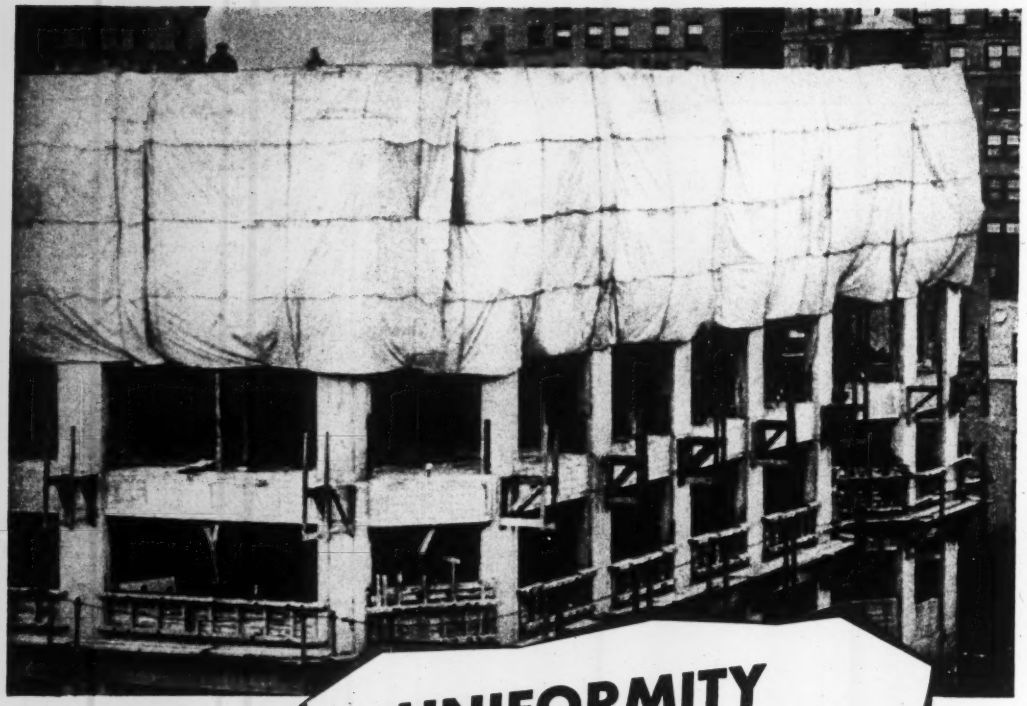

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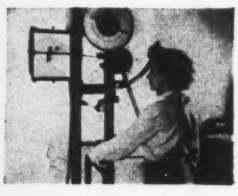

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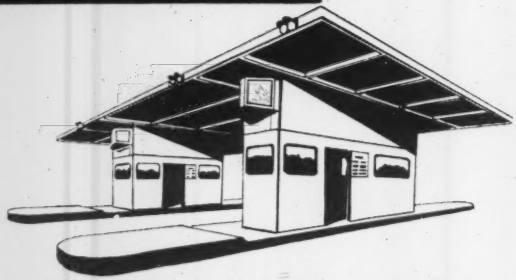

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READER COMMENT

Timber not Timken

Sir: Our attention has been callled to page 75 of the July 17, 1952 issue of ENGINEERING NEWS-RECORD, on which appears a small news item entitled "Floor Research Shows Importance of Nailing," wherein the statement is made in part as follows: "wood products laboratory of the *Timken* Engineering Co., Washington, D. C." Because of the facts as stated in the story, I am sure that this should have read *Timber* Engineering Company. (It certainly should—Ed.)

EDWIN R. BUTLER
Publicity Manager
Timber Engineering Co.
Washington, D. C

Are test cells adequate?

Sir: Your article, "Heat-resistant concrete for jet-engine test cells," (ENR June 12, p. 48) raises some questions concerning noise reduction in the cells and precautions taken to resist the erosive effect of hot gases.

Reciprocating engines develop a noise level of about 100 decibels, while jet engines create 135 decibels or more, a noise level that is above the limit of humanly acceptable noise. Have these test facilities proved adequate in reducing the noise to acceptable levels, especially in the connected control rooms?

In the cells, from 5,000 to 7,000 cu ft of air are moved at a speed of 1,000 ft per sec. The temperature of the escaping gases when after-burners are used reaches 3,500F. The impact and erosive effect of these hot gases concentrated in the augmenter and on only a small surface of the sound-absorbing blocks would cause honeycombing, cracking and complete disintegration, if special precautions were not taken. These measures were not divulged in the article, but would be very useful information for other designers and builders. What were these precautions?

ALFRED SCHWARZ
Boston, Mass.

EDITOR'S NOTE—This letter was submitted to the General Electric Co. and the following is the reply of the company's engineers:

Sir: The noise level developed by jet engines was given serious consideration at the time these test cells were designed. The sound block and high-frequency batts as installed re-

(*Continued on page 13*)

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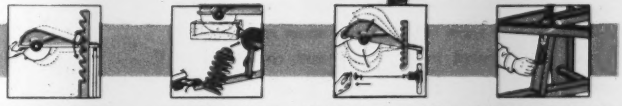

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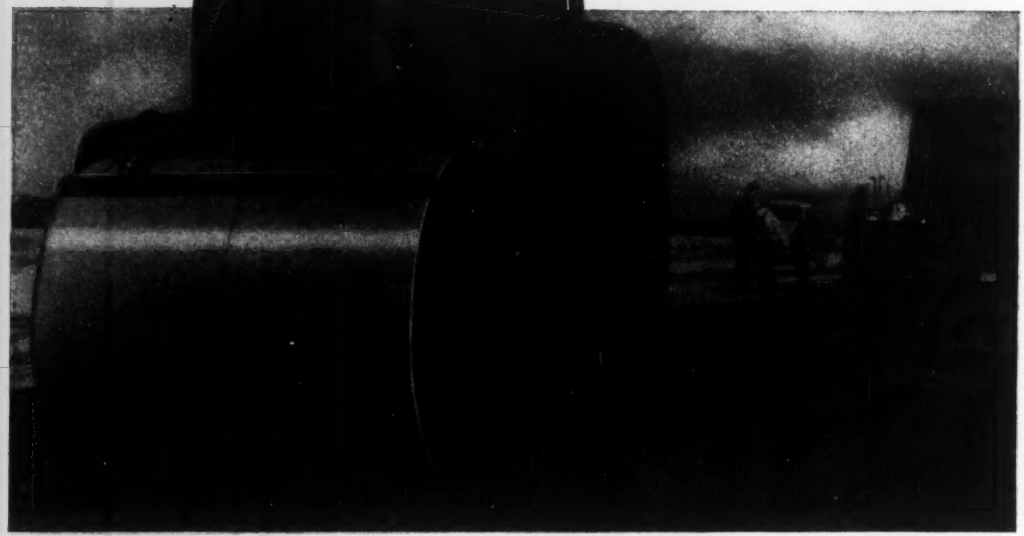

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Such features as permanent bearing alignment in the kingpin and swivel pin assemblies, the wrap-around frame that gives you a new concept of rigidity, and HUBER's perfected version of fluid coupling are among the improvements that will catch your interest.

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This 16-page bulletin, T-152, tells the story of the new HUBER Tandem Rollers in pictures and descriptive copy. Ask for your copy—address requests to Huber Manufacturing Co., Marion, Ohio.

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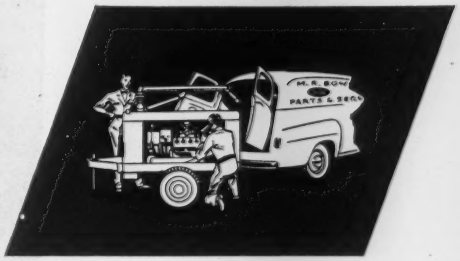

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Ford Industrial Engines are now offered in six series: One 4-cylinder, two 6-cylinder and three V-8 cylinder, ranging up to 317 cu. in. displacement. All are available as complete power units or as individual engine assemblies. Write for descriptive literature on these engines and also the—

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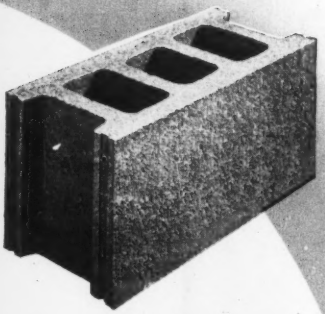
This Modern Building Material Adds Beauty and Permanence to ANY Type of Structure!



You can build concrete masonry structures in beautiful architectural designs with the assurance they will last a lifetime. Both exterior walls and interior partitions are made in many pleasing patterns by varying the styles and sizes of block. The initial cost is low and the upkeep is nil.

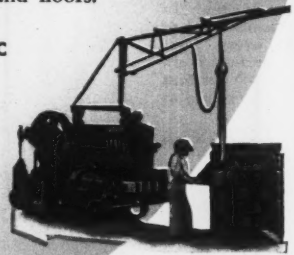
Concrete masonry structures are ARMORED against age, climate, fire, termites, rodents, tornadoes, hurricanes and floods. Interior walls are built with lightweight block composed of cellular aggregate which provides proper acoustics and reduces noise transmission through walls. Lightweight block are also used as a back-up material for exterior walls providing insulation against heat and cold. Wall dryness provides good health and sanitary conditions. Restful quiet is assured by sound conditioning between rooms and floors.

CHURCHES find concrete masonry construction both practical and economical.

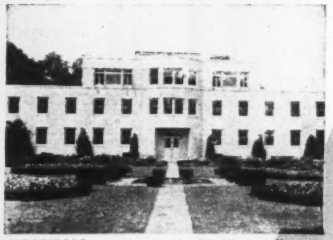
All Styles and Sizes Made on the VIBRAPAC

The Besser Company is a leader in promoting the Concrete Products Industry and making it a world-wide enterprise. All styles and sizes of block are made on an automatic Vibrapac machine, using One Set of Plain Pallets. Many large contractors and builders find it profitable to install Vibrapac machines and produce their own concrete block. Why not investigate? Write for Bulletin No. 86, illustrating concrete masonry units, also names of Vibrapac-equipped plants in your area.

BESSER MANUFACTURING CO.
Alpena, Michigan, U. S. A.



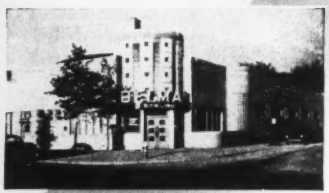
Besser Vibrapac with Power Off-bearing Hoist. Produces three 7⅝" x 7⅝" x 15⅝" modular units at a time on one Plain Pallet. Smaller units made in larger multiples on the same pallets. Fully automatic. Operator merely guides the hoist.



HOSPITALS are constructed with block walls and floors to promote health and safety.

PUBLIC BUILDINGS throughout the world use millions of concrete masonry units.

HOMES, both large and small, are built of block for firesafety, beauty and permanence.



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A 7077-1PB-C

READER COMMENT

(Continued from page 8)

duce the noise in the test cell area appreciably. The noise level in the control rooms is very satisfactory; it is below the level generally considered acceptable for such working areas. This is accomplished mainly by complete isolation of the control rooms from the test cells.

In regard to erosive effects on the low-frequency block, it is true that we know of no refractory able to withstand the high temperatures and velocities encountered at the jet-engine tail pipe. In our installation, however, the temperature at the face of the block is held to about 1,000F. with afterburning. This is accomplished by the high flow of secondary air) (cooling air) induced by the augmenter.

The strength of the block decreases with temperature, and blocks that are good acoustically are generally of low strength. As a result, we found it necessary to sacrifice some attenuation and to install high-strength block on the face only in cells operating with afterburner engines, and erosive effects have been reduced to a minimum.

Rocker should be wheel

Sir: In the reader comment columns (ENR Aug. 7, 1952 p. 7) there was quite an extensive letter concerning rockers and their reactions. It seems that certain considerations which were not mentioned enter into the picture.

A rocker is intended to be a better device for allowing expansion than the old-fashioned roller nest. It must meet certain requirements:

1. It must keep the roadway surface at the same elevation for all positions of the rocker.
2. It must avoid causing bending stresses in the supports.

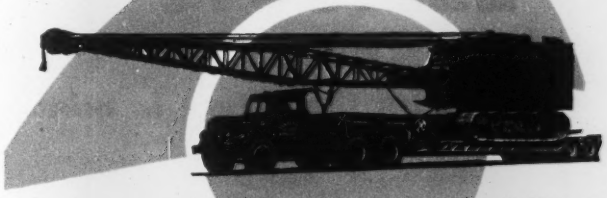
To accomplish these results the rocker must, in principle, be a wheel supporting the movable end of the structure upon its axle. Because of the small amount of movement the complete wheel is not needed so a sector is used.

For a wheel to be a success its periphery must have the same center as its axle. Then the load upon the surface on which the periphery bears will always be vertically under the center of the axle, and there will be no horizontal thrust upon the support.

A rocker in which the curvatures of the top and bottom surfaces are not concentric will, as indicated in the

Compare Rogers trailer specifications with others and study Rogers special features of construction. You're certain to be impressed.

Much equipment included with standard Rogers trailers is considered extra in other makes. In fairness to yourself, consider every detail of the trailer you buy... you'll choose a ROGERS.



To the best of our knowledge, only Rogers uses alloy steel in the main carrying members of the frame. This is your insurance against the possibility of unintentional overload damage.
Write for the Catalog.

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EXPERIENCE builds 'em — PERFORMANCE sells 'em

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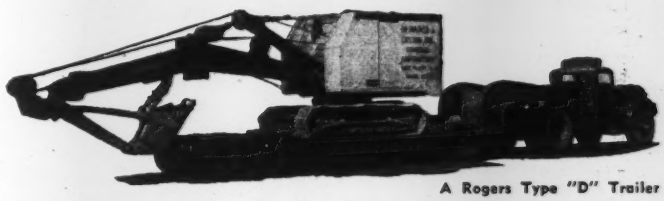
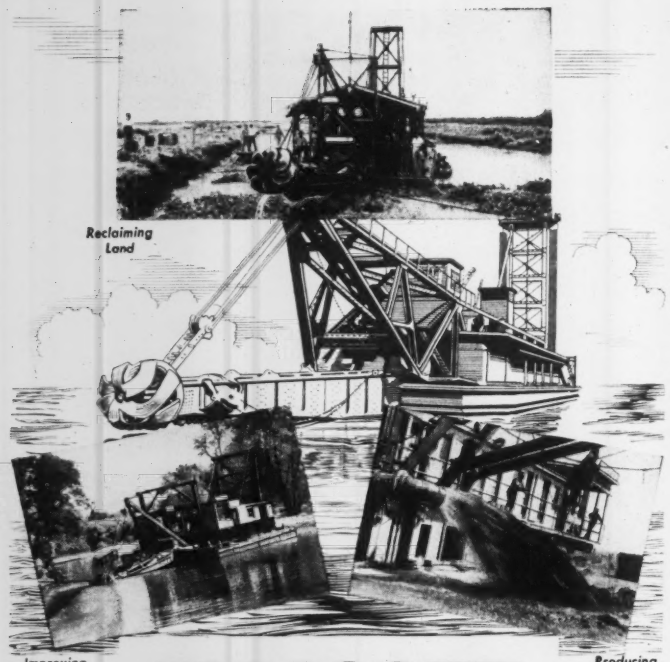


A Rogers Type "D" Trailer



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MOST dredges are purchased for a particular project. However, the extent to which the dredge you buy may be readily and economically adapted for other jobs in the future determines the soundness of your investment.

Sometimes a particular dredging job requires an extremely specialized machine. But in most cases, Ellicott-built dredges can be made versatile enough to have a useful life in many varied operations. Filling land . . . maintaining and improving channels and harbors . . . digging canals . . . desilting . . . building dams . . . producing sand, gravel and shell . . . all can usually be done by the same Ellicott Dredge, with but relatively few alterations.

Because Ellicott Dredges are designed with the future in mind, your investment is protected. You can be sure that the dredge Ellicott engineers design for you will serve you for many productive and profitable years. What's more, Ellicott's years of experience is further assurance that your dredge will *outperform all others on every basis!* For more information, write for Catalog 825. Address: ELLICOTT MACHINE CORPORATION, 1603 Bush Street, Baltimore 30, Md.

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ELLICOTT DREDGES

comment referred to, exert a decided thrust upon the support. A further consideration is that when the angle d/L becomes equal to the angle of friction of dry steel on steel (about ¼) the rocker will snap out of place suddenly and drop the span. It may be restrained by the dowel often used, which is inserted loosely in holes in the rocker and the support. Incidentally, it is hard to conceive of a cruder mechanical device than this dowel. Further, the hole in the support will fill with water and rust the dowel away in not too many years.

If the reader will consider carefully the rocker illustrated in the August 7 issue, he will see that the distance L will be different for every different angle that the rocker assumes with the vertical. This means that the roadway of the bridge will be at constantly differing elevations as the span expands or contracts. If the adjoining span is fixed there will be a bump at every position but one of the rockers.

Why not adopt the sound principle that a rocker, to serve its purpose properly, must be a sector of a wheel; not merely a piece of metal with ends rounded to suit the designer's fancy?

LEWIS E. MOORE
Consulting Engineer
Boston, Mass.

Aid or trade?

Sir: I have read with pleasure the editorial on page 45 of your July 24th issue. Much of what you say with regard to aid to "friendly nations" and economic tariffs apply to a lesser degree here in Canada, although we have lately instituted a certain amount of "Buy Abroad" attitude.

If we in North America have come to the conclusion that we cannot stand alone, then our partners must be brought into the picture. If we do this by financial and material aid only it will create a situation similar to the hand-outs of the depression period of the 1930s. This develops a poor moral attitude by both giver and receiver and will finally burst out as a form of utmost distrust and hatred by all parties concerned.

If we realize that all countries are the better for working out their own salvation, with some temporary assistance to offset the tremendous losses they have suffered during the last two great wars, then we must allow them to trade with us. If our living standard is too far ahead of our "friends" then we must be prepared to slow down and allow them to gradually catch up with us.

J. A. C. BOWEN
The Hydro-Electric Power Commission of Ontario
Toronto, Ont.

"... the 99-H is the most versatile grader I have ever seen, as well as the most maneuverable."

Howard Price, President
Howard Price and Company
Huntington, W. Va.

"This grader is on U.S. Route 35, where we are engaged in a project involving 2.05 miles of grading, draining and ditching, as well as paving the highway in North Charleston between Two Mile Creek and Tyler Creek.

"This is the first Austin-Western grader to be used in this family of contractors, and I have no hesitancy in saying that the 99-H is the most versatile grader I have ever seen, as well as the most maneuverable. It will do jobs that other graders will not do, and, when the going is really tough, it will operate under conditions that other graders would not attempt. Just recently, after several days of heavy rain, the 99-H was doing its chores on schedule. Two other graders of well-known makes were compelled to stand by until the terrain was favorable to the extent that they could be put to work. This adds up to more hours operation every week for the 99-H.

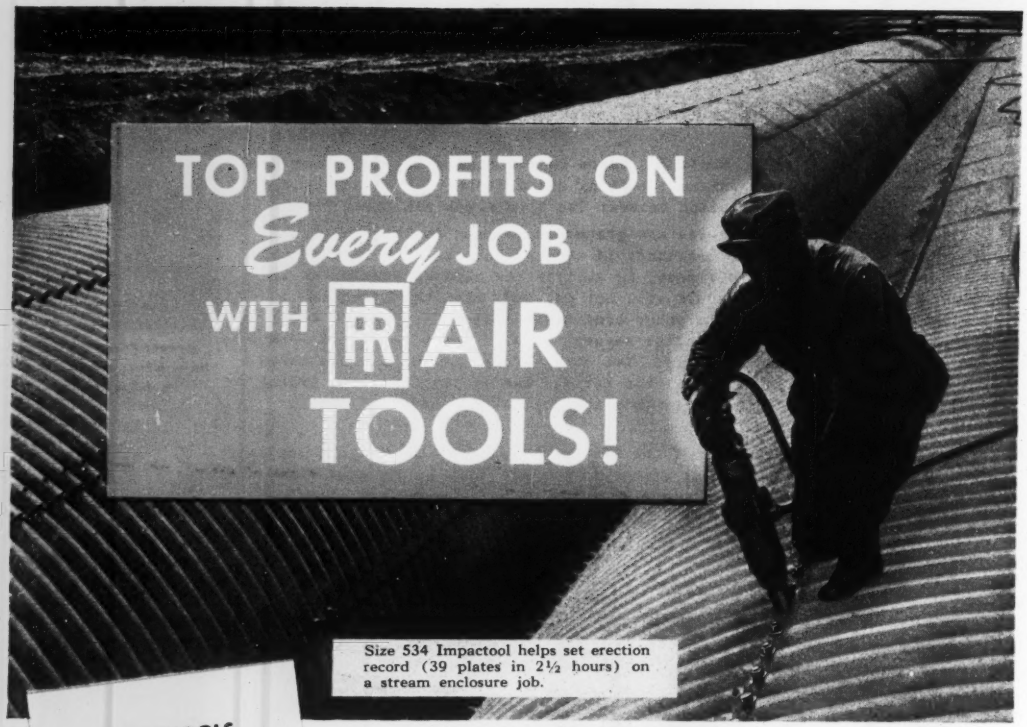
"Aside from the standpoint of the 99-H's ability to take tough going in stride, it is also the easiest grader to operate that I have ever owned. The operators like it, which means we get more efficiency from them."

HOWARD PRICE AND COMPANY
Howard Price
President

Thank you, Mr. Price, for putting into words—what so many other contractors have learned—that Austin-Western's *exclusive* combination of ALL-WHEEL DRIVE and ALL-WHEEL STEER means top grade performance by America's top grader.

AUSTIN-WESTERN COMPANY · Subsidiary of Baldwin-Lima-Hamilton Corporation · **AURORA, ILLINOIS, U.S.A.**

BALDWIN BLH LIMA-HAMILTON



Size 534 Impactool helps set erection record (39 plates in 2½ hours) on a stream enclosure job.

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SCHOOL NEEDS PUT PRESSURE ON STATES

• **The problem**—The U. S. educational system is suffering from "growing pains" that can have a real and measurable effect on the construction industry for at least the next eight years. Last week, Earl J. McGrath, U. S. Commissioner of Education, reiterated earlier estimates that the nation will need another 600,000 classrooms by 1960. They will cost about $10 billion.

Although the 82nd Congress voted increased federal funds for grants to schools for fiscal '53—$135 million compared to $75 million in fiscal '52—the bulk of the burden still rests with the states. Legislation authorizing new or increased state financial aid to localities for public school construction purposes has been enacted during the last four years in at least 16 states. The amount of this state aid totals more than a billion dollars.

State aid for general school purposes—such as administration costs, teachers' salaries, some pensions, etc.—has long been an accepted fiscal pattern in a number of states. But, since the end of World War II, a new trend has developed. Many states are now granting special state financial assistance—solely for school construction. They are recognizing the local problems faced by school districts which have had to face rapid growth in enrollment without adequate school plants to house the children—and, in too many cases, without adequate financial capacity to build the new schools required.

• **The solutions**—The 16 states which have already taken action to speed up their school building programs through state aid to local districts will not be alone. Of the 44 state legislatures scheduled to convene next year, nearly all will be asked to consider financial solutions of the school construction problem. There is little doubt that many of them will follow the lead of the sixteen which have already worked out such programs.

Some of the states carrying out state-aid programs require matching funds from their localities; some make outright grants; others extend loans to the localities.

• **Breakdown**—Georgia, Maine and Pennsylvania are using the revenue bond principle to aid localities in meeting their school building requirements. State agencies are empowered to finance school construction through revenue bonds amortized from rentals paid by localities for use of the buildings.

State general obligation bonds are financing school building aid in California, Delaware, Maryland, North Carolina, South Carolina and Washington. Connecticut, Massachusetts, Minnesota and Virginia grant state aid out of general appropriations. Alabama's legislature is expected to refer to the voters a state constitutional amendment next year to aid localities. This would be amortized from state sales tax revenues.

New state taxes have been necessary to support school building aid programs in at least two states—South Carolina and Tennessee—both of which enacted sales taxes in recent years primarily for that purpose. Arizona, faced with a legislative report that estimated school construction needs at $121 million for the next 16 years, is looking for a revamping of state tax laws, and Florida will vote in November on a state constitutional amendment to permit use of motor vehicle registration funds for school construction.

Some states, instead of increasing state aid to districts, have broadened the taxing powers of local school districts to enable localities to finance their school building needs. These states include Kentucky, Montana, New York, Ohio, Utah, West Virginia and Wisconsin.

States which are studying revenue measures—either for state aid or local taxing—include Michigan, Mississippi, New Jersey, North Carolina and North Dakota. Action may be expected from these states in the next legislature.

THE SIMPLIFIED APPROACH TO STRUCTURAL DESIGN

Within the covers of this catalog, you have a practical approach and follow-through in steel building design.

This catalog demonstrates the economies of the 20 foot bay module in structural frame design.

From your original thinking and planning of a building type for a given area and occupancy need, this catalog provides actual details drawn to scale that can be adapted to your needs.

In this phase of structural frame design, Macomber provides you with the accepted methods of present day structural assembly, designed to utilize standards that will reduce building costs.

It is our sincere belief that no structural engineer will file this catalog further away than his desk drawer when he sees what Macomber has compiled in these 20 pages of useable design information. Where shall we send your copy?

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STANDARDIZED STEEL BUILDING PRODUCTS

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- **Morocco airbases**—When a Senate Armed Services Subcommittee headed by Sen. Lyndon Johnson came out with a blistering report on construction of air bases in Morocco (ENR Sept. 4, p. 71), it got a lot of headlines. Last week an equally important counterblast all but passed unnoticed.

  In a report to the House, an Appropriations subcommittee blamed the Air Force for inadequate planning and the Bureau of the Budget for unnecessary interference. The Army Engineers and their chief, Gen. Lewis A. Pick, said the report, have suffered a "substantial injustice" through being made the "whipping boys." It also published the detailed statement by Atlas Constructors, and testimony of J. B. Bonny, chairman of the Atlas Constructors' operating committee. After carefully analyzing 800 pages of testimony taken in closed session, the subcommittee said the facts clearly indicate the civilian contractors and architects are not to blame for most of the construction difficulties on the project.

  Further, it said a lot has been accomplished in Morocco. "Less than a year after ground had been broken, two giant airfields were in use, and a third was well on the way." Evidence did not support charges that runways at Nouasseur and Sidi Slimane were so poorly built "they may need almost complete replacement costing as much as the original work." Instead, war tensions of 1950-51 were eased by the speed on construction, said the report.

- **Northwest power**—You don't hear as much talk about a power shortage in the Pacific Northwest this year as you did a year ago. But the only reason is because the power people are keeping mum about it. Right now, the area is worse off than it was a year ago as far as the weather is concerned. Even with help from impounded waters at Hungry Horse (see page 24), there will be trouble shortly—brownouts and industrial shutdowns—unless big rains come soon. And none are expected.

  Meanwhile legal difficulties continue to complicate the picture. The Corps of Engineers has been ordered to show cause in federal court on Oct. 8 why it should not be restrained from impounding water behind Albeni Falls Dam on the Pend Oreille River near the Idaho-Washington state line (ENR July 3, p. 24). The city of Sandpoint has filed suit asking the restraining order and $1,000 a day for the damages alleged to have resulted to the city's sewage plant and beaches from impounded waters. The impounded water will add 100,000 kw of power to Pacific Northwest supplies this year. . . . A superior court decision which would block a proposed $146-million hydroelectric development on the Cowlitz River in southwest Washington state is being appealed to the State Supreme Court.

- **Politics again**—Around every election time a rash of scandals breaks out. They often involve construction firms working on politically controlled projects. Some of the less scrupulous firms are caught actively trying to buy business by placing campaign contributions; others, subjected to political pressure, yield and "kick in."

  Last week, scandal broke out in Ohio. Contractors having business with the State Highway Department were solicited for contributions to the campaign fund of State Auditor Joseph T. Ferguson, according to charges published in the Cleveland Press. An investigation has been started by the U. S. Bureau of Public Roads. State and local authorities also may prosecute.

  Photostated letters show contributions ranging from $25 to $250 were sent in by at least ten firms. State Highway Director Sam Linzell, whose own department is not involved, said he would see that the work of contractors who "kick in" henceforth would receive more rigid inspections.

Severe Shock Loads With Stress in One Direction

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ROLLER ENDS, precisely square to avoid end-rub, oscillation and side-shock.

RIGHT-ANGLE
BEARING SURFACES with parallelism that results in unwavering rightline rolling.

RIGHT-ANGLE
SEPARATOR SLOTS accurately machined to prevent roller skew, slide and uneven wear.

Capacity of a bearing to resist fatigue and permanent set, is put to the test in crushing machinery, in which severe shock loads are imposed *in one direction.* Rollway Solid Cylindrical Roller Bearings afford the elastic limits and the high fatigue values to take these highly localized stresses in stride.

That's because Rollways are made right. They provide more metal to carry the load . . . maintain long line contact with the race.

Right-angle loading reduces unit pressures. Right-angle trueness reduces wear, heat, noise.

Our complete engineering and metallurgical services will gladly work with you on your problems. Simply write or wire any sales office. No cost. No obligation.

Rollway Bearing replacements are available through authorized bearing distributors in principal cities. Consult your classified 'phone directory.

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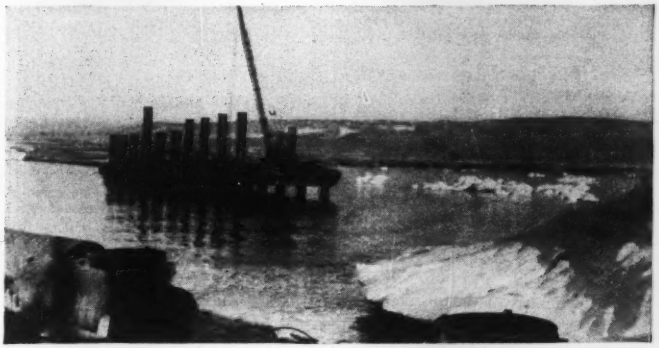


DELONG DOCK, a long way from the Gulf of Mexico, where it was fabricated, is putting down its caisson piles amid the ice of Thule's waters. Four of these docks put together made a permanent 50x1,000 ft unloading pier (ENR May 29, p. 44).

Construction details bared on Thule Air Base project

By Vincent B. Smith
Washington Staff

Operation Blue Jay broke the frozen North. In nine months of 1951, U. S. construction forces whipped a bleak and barren site at Thule, Greenland, into an operational air base.

Last week Army Engineers took the wraps off an inside story for ENGINEERING NEWS-RECORD. It is a story of construction problems on a project that in many ways is the toughest the Corps of Engineers has ever tackled.

Victory in their first massed attack on arctic wastes swept away for all time any fears or doubts about the ability of U. S. constructors to master the frigid North. That is the prime significance of the accomplishment, as Lt. Gen. Lewis A. Pick, Army Chief of Engineers, sees it.

The top of the globe is now there for the taking. And the meaning goes far beyond military advantage alone. There are resources to be gained that may prove much more important than defensive strength.

During the brief summer of last year, construction teams hit the chin of Greenland's west coast, 800 miles from the North Pole. By September, they had an air strip in operation—which was what the Air Force wanted. Before the dark night of winter closed down, they had erected a small city that could support base activity and continuing construction by those who stayed on for the winter.

This summer, the Navy forces struck again—but with feelings quite different from those that attended the 1951 pioneer effort. Ocean transport through ice fields and past submerged peaks had become routine. The airlift was standard procedure for moving men and rush freight. Base construction roared toward completion. American constructors had slugged their farthest north outpost into submission.

• **In the beginning**—No bright victory was assured when Air Force Secretary Finletter tossed the Thule problem at Pick on Dec. 22, 1950. The two men looked at a small picture of a rocky plateau, with windswept snow piled up against the crags. Could that frozen site be converted into an operational air base in nine months? Pick said yes, provided Finletter was as fast in furnishing cash as the Army Engineers would have to be in their planning and procurement.

Pick wanted $1 million the same day, $15 million by Jan. 15 and the rest of $50 million Feb. 1. Finletter agreed. And Pick phoned two contractors to come to Washington—Peter Kiewit of Omaha and S. J. Groves of Minneapolis.

They met in the chief's office three days after Christmas. Would they help? Twenty minutes to think it over, and the answer was yes. To their team, they added Condon-Cunningham of Omaha, top-flight earthmovers, and Al Johnson of Minneapolis, canny north-country constructor. With that spread, the joint venturers tackled the job and whipped it.

Everybody pitched into planning, procurement and expediting. Operations headed up in a New York office housing the Northeast Engineer District, the contractors and the engineer-architects—Metcalf and Eddy of Boston and Alfred Hopkins and Associates of New York.

• **Selecting the site**—A preliminary reconnaissance party landed at Thule in February on a weather station air strip. They picked a better site for the airbase, several miles from the plateau Pick and Finletter had looked at. Army Map Service produced a 2-ft contour map of the area in two weeks from available information.

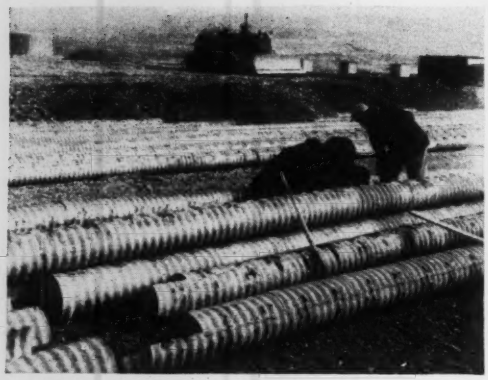
Materials and equipment were ordered running up toward $90 million. Korean reverses had tightened the supply problem, but materials were found—even for the aluminum skin on the Clements insulating panels chosen to inclose the buildings.

Decision to use those panels was quickly made—on the basis of successful experience with a single hut. Orders were placed with six manufacturers, and nearly half-a-million panels were shipped to Thule. The panels consist of 3½-in. fiber glass insulation between ¼-in. plywood sheets faced with aluminum. They are lag-screwed to wood framing or nailing strips.

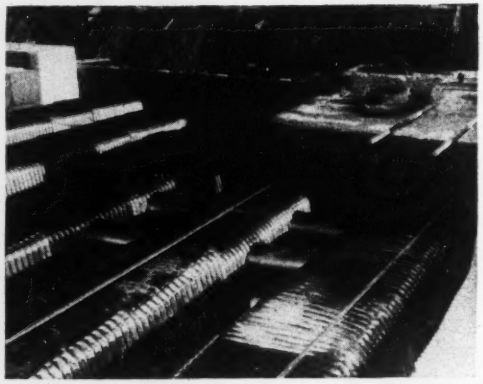
Expediters hustled materials from all parts of the country to Norfolk, the shipping point. At Minneapolis, 5,000 carefully screened workers were trained and held on call.

More than 100 shiploads moved in excess of 300,000 measurement tons and 4,400 men to Thule. There twenty-nine construction teams, with their materials and equipment, hit the beach from ships that were combat loaded, with first things to come off first. It was the biggest peacetime landing operation in Army Engineer history. Another 700-800 men went to Thule by air.

• **Frozen earth**—Pack ice delayed landing of the first convoy two weeks—until July 9. Construction—already started—swung into high gear immediately on runway, hangars, barracks,



KEEPING COOL—Cold air is circulated under the concrete floor of the biggest structures ever built on permafrost. The corrugated pipe circulates cold air to keep the ground from thawing.



KEEPING COOL ANOTHER WAY—The plenum method keeps the permafrost frozen under a concrete floor. Corrugated plenums are circulating cold air in contact with permafrost.

warehouses and fuel tanks. Most of the workers slept and ate aboard barracks ships until permanent buildings could be erected.

Permafrost, or permanently frozen earth, is the main problem at Thule. It has been drilled to more than 1,000 ft with no end in sight. Experts say it goes down 1,600 ft or more.

On top is an active layer 3 to 5 ft deep that softens under the 24-hour summer sun. It is this layer that causes trouble. To support a load it must be kept frozen.

Thule's engineers control this squashy surface layer by blanketing it with an insulating layer under structures. Under heated buildings, the insulation must stop heat transmission.

Small buildings are supported over pads of crushed stone, gravel or other non-frost-acting soil, containing a minimum of silt, with several feet of air space between the insulated floors of the structures and the underlying material. The pad acts as insulation in summer. But for large structures like the big steel-frame hangars, vehicle storage buildings and shops, a different system is used.

A half-dozen hangars are completed or nearing completion at Thule. They are the largest structures ever erected on permafrost. These big structures have specially insulated concrete floors supported on piles steam-jetted and set in the permafrost. Under the floors are placed special pipes and plenum chambers for constant circulation of cold air beneath the concrete.

For the 10,000-ft runway, taxiways and aprons, the engineers met the problem by removing the active layer of quakey soil and placing fill and pavement to a total depth of 6 ft. Each layer of the selected granular base fill is compacted to specified density. Compaction isn't possible much after the middle of September. But despite that short working season the builders met the target date last year and had enough runway operational to serve the purpose of the base for big strategic aircraft.

On the compacted base goes a built-up pavement of several courses surfaced with asphaltic concrete.

• **Fighting the cold**—Sub-freezing temperatures to 50 deg. below zero and hurricane-force winds up to 150 mph make winter difficult at Thule. The snowfall isn't heavy—only 10 to 12 in. But the winds can drift it badly. Streets of the base therefore are located to let the prevailing winds keep them clear.

A number of heating and power plants serve the base. Some are combination plants; others are for heating only. Oil is the universal fuel. Diesel generators in the power plants exceed 10,000 kw in total capacity.

PIPE NIGHTMARE. Corrugated metal pipe enclosing a Ric-Wil pipe enclosing insulated steam lines under a fill.

Steam is distributed above ground through insulated lines. These consist of an outer shell of corrugated Ric-Wil insulated pipe housing the steam supply, steam return and condensate return lines surrounded by insulating material. Barracks and smaller buildings are heated by forced warm air; larger buildings, by unit heaters.

Like the barracks and warehouses, the heating and power plants are inclosed with insulating sandwich panels of the kind already described, widely used to line refrigerators. These panels form the sides, roof and floors.

Hangars, however, have double walls. To the outside of the steel-frame arches is fastened an exterior shell of galvanized corrugated sheets protected by a bituminous-asbestos outer coat. On the inside of the arch framing is a second wall of Clements panels, which can be erected in winter, after the exterior is inclosed.

• **Water problems**—As underground piping can't be used, both water supply and sewage disposal at Thule are handled by tank truck, heated as necessary. The engineers considered use of Utilidor sewage lines, similar to the Ric-wil pipes for steam, but they chose marine-type toilets and tank truck disposal instead, at a saving of $3 to $7 million.

Reconnaissance parties in early 1951 could not tell whether the area might supply enough fresh water for the camp. Consequently the builders brought in and set up three salt water distillation plants that could handle camp needs. Intake lines and jetties were run out from shore to reach under 8-ft winter ice.

Two sources of fresh water have

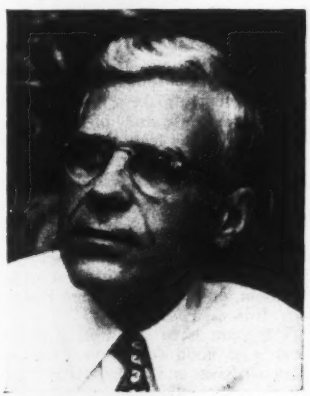
since been found, requiring only minimum filtration and chlorination. The first, now in use, is Lake Eddy, with 70 mg capacity in summer and 18 mg under winter ice. Being developed is the main source, Crescent Lake, to be formed behind a dam by diversion from the North Star River. It will hold 88 mg in summer and 41 mg under ice. The distillation plants will remain as standby units.

In use at Thule are barracks, mess halls, warehouses (both heated and refrigerated) and complete automotive repair, equipment repair and shop buildings, including a fully equipped machine shop. These shops maintain contractor equipment at a great saving where normal maintenance facilities are not available.

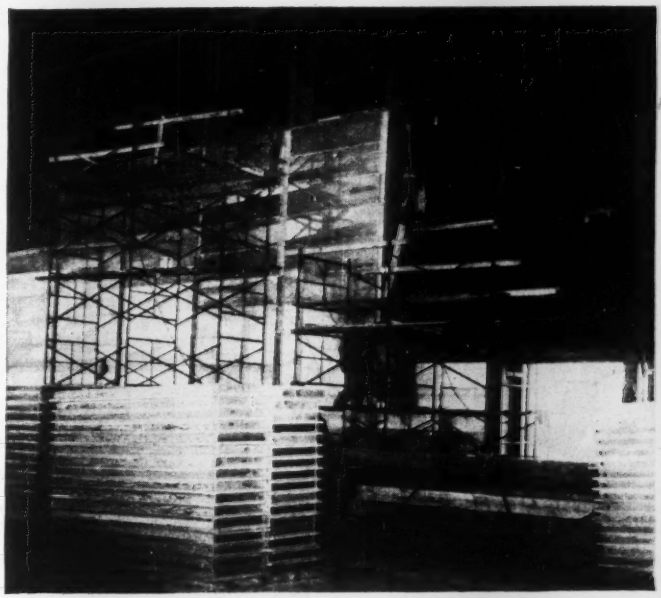
• **Barges become dock**—Late in the 1951 season, the base got a real dock for unloading ships. Up to that point cargo had to be brought in by beaching LST's or unloading from smaller shuttle craft like LSM's across eight finger piers. These piers consisted of LSM's with superstructure removed down to dock level.

For the permanent dock, four 50x250-ft patented barges (ENR May 29, p. 44) were towed from the Gulf of Mexico and positioned end to end. Caissons supplied with these barges then were driven, the barges jacked up on the caissons, and the caissons cut off at proper elevation and filled with concrete. The barges then were planked over to make a 1,000x50-ft unloading dock adequate for two Victory ships at a time.

• **Size of the job**—Manpower and equipment tell something of the size of the Thule operation. Engaged there last year were something like 3,500 construction workers, as many transportation troops and probably 1,000 Navy personnel. This year at Thule there are estimated to be probably 4,000 civilians and troops in a total base force of about 5,000.



PETER KIEWIT, of Omaha, Neb., took 20 minutes to decide to join the project.



CLEMENT PANELS used for almost all buildings on the project are used to line the inside of a big steel-frame hangar. The panel is a direct descendant of the butcher-shop refrigerator box. Six manufacturers made ½ million of them.

Construction equipment runs into big figures. As examples there are more than 30 power shovels, 40 cranes, 150 tractors, 500 trucks, 60 rubber-tired tractor-trailers, 30 graders, 40 rollers, 70 drills, 18 crushing plants, 16 concrete mixers (including two pavers), and three asphalt plants. To those should be added 60 welders, 70 air compressors, 90 pumps and the rubber-tired scrapers, plows, buckets, attachments and miscellaneous equipment that go to make up the construction plant.

To complete the facilities Army Engineers originally were told to build at Thule will cost $184 million. That is the best present estimate. Only the Air Force can say what additions may be decided on later.

Now on hand at the site, as part of the original program, are $26 million of materials that will be put in place next year at a cost of $18 million, to complete the $184-million schedule.

Thule was made possible by the cooperation of the Military Transport Services, the Air Force, Army, Navy, Coast Guard and the Danish government. Col. Clarence Renshaw was the District Engineer in charge last year. His deputy, Col. Morton Solomon, has since succeeded him in the district engineer post.

Damage suit hits engineering firm

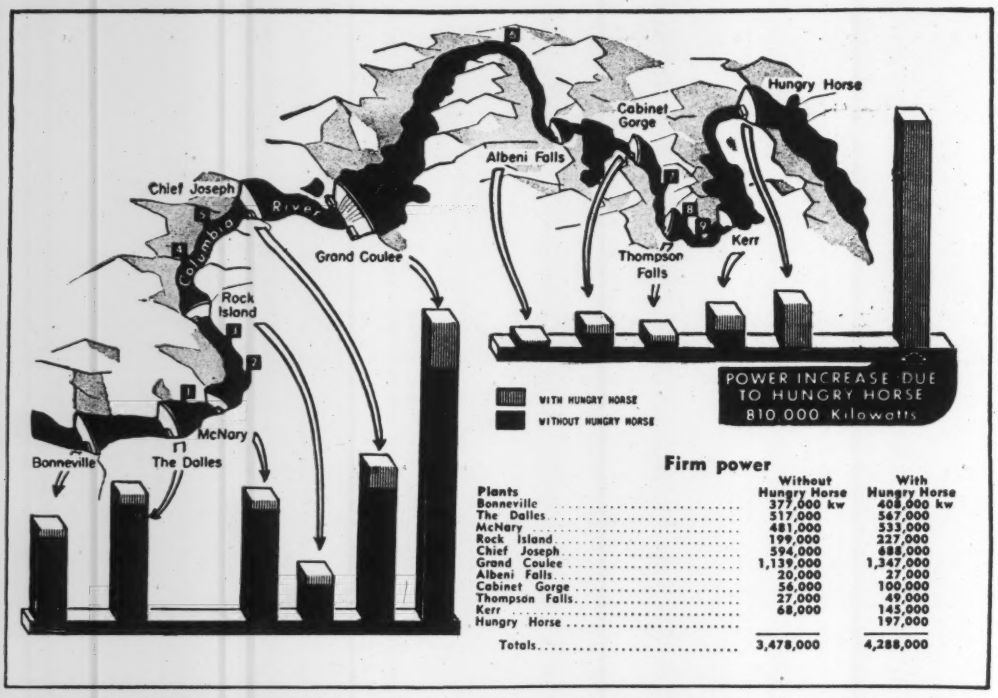
A $275,000 damage suit against an engineering firm for alleged "negligence and carelessness" in a $2.5-million paving project has been filed by the city of Daytona Beach, Fla., in Federal Court at Miami. Defendant is Gannett, Fleming, Coddry & Carpenter, Inc., which the city retained to design and supervise the paving program.

Biggest item in the municipalities damage claim is $150,000 because of the engineering firm's specification for Trinidad lake asphalt. The bill of complaint alleges that this spec "caused the city to pay $132,000 more than domestic asphalt would have cost." It was also alleged that the amount of asphalt used failed to meet specifications.

Other claims listed in the bill:

1—$55,043 overpayment to the general contractor, Brinson Cone & Manley, on the certification of the engineers.

2—$55,049, the difference between the $94,049 paid the engineering firm for supervisory and inspection services, and the $40,000 which the city contends was a fair fee.



Firm power

Plants	Without Hungry Horse	With Hungry Horse
Bonneville	377,000 kw	408,000 kw
The Dalles	517,000	567,000
McNary	481,000	533,000
Rock Island	199,000	227,000
Chief Joseph	594,000	688,000
Grand Coulee	1,139,000	1,347,000
Albeni Falls	20,000	27,000
Cabinet Gorge	56,000	100,000
Thompson Falls	27,000	49,000
Kerr	68,000	145,000
Hungry Horse		197,000
Totals	3,478,000	4,288,000

DOWNSTREAM POWER BENEFITS—Ultimate benefits from Hungry Horse Dam from year-round dependable power production of downstream plants on the Columbus River are outlined here. Additional benefits will go to proposed dams and power plants: John Day, Ringold or Richland, Priest Rapids, Rocky Reach, Wells, Boundary, Noxon Rapids, Trout Creek, and Paradise.

Hungry Horse dedicated

In brief ceremonies at the dam and at Kalispell, Mont., President Harry S. Truman on Oct. 1 dedicated the 3,100,000-cu yd Hungry Horse Dam. He also put into operation the first of four 71,250-kw generators. Thus, the power-short Pacific Northwest benefits from the first power to come from a postwar federal construction project. Other power has been added at Grand Coulee Dam, and McNary Dam is due to add more next year. But Hungry Horse is the first federal project started in postwar days to deliver power.

Concrete for the 3,100,000-cu yd, 546 ft high dam was essentially all in place as the dedication program took place. Only one more block remains to be completed in the dam proper and all concreting operations will be terminated by mid-October. Placing started Sept. 7, 1949 (ENR Dec. 22, 1949, p. 31) and 60,000 cu yd went in the dam that year. This was followed by 968,000 and 1,389,000 cu yd during the 1949 and 1950 construction seasons.

On the date of President Truman's visit, the prime contract for construction of the dam and power plant was 95% complete with only 79% of the contract time elapsed. Contractors General-Shea-Morrison, a combination of 12 firms, have until November next year to complete such operations as dismantling their construction plant. The contract for $43,431,000 was the largest ever awarded by the U. S. Bureau of Reclamation. Total cost of the project exclusive of irrigation works is $103 million.

Other generators are scheduled to go on the line in December, 1952, August, 1953, and November, 1953. Power contracts have already been signed with a new phosphate plant, the new Anaconda aluminum plant (111,000 kw) and the Montana Power Co. But power benefits were evident a year ago. Water stored during the winter firmed up capacity of such downstream plants on the Columbia River system as Grand Coulee and Bonnneville.

Both private and public plants now built and under construction below Hungry Horse Dam that ultimately will benefit from Hungry Horse storage will include Kerr Dam and Thompson Falls in Montana; Cabinet Gorge and Albeni Falls in Idaho; and Grand Coulee, Chief Joseph, Rock Island, McNary, The Dalles and Bonneville dams on the Columbia River in Washington and Oregon.

Three-man team studies Kansas River Basin

The Kansas Industrial Development Commission announced last week the names of a three-man engineering team selected to make a flood control and land-water use study of the Kansas River Basin. The team: N. T. Veatch of Black & Veatch, Kansas City, Mo.; Abel Wolman, Johns Hopkins University, Baltimore, and L. R. Howson, of Alvord, Burdick, Howson, Chicago.

Aim of the group is to obtain an "objective and unbiased answer" to flood control and soil conservation in the basin, on instructions from Kansas Gov. Edward F. Arn.

The team is to study all available records of flood stages on the Kaw (Kansas) River and its tributaries, and review and analyze flood reduction plans of the Corps of Engineers and the Bureau of Reclamation.

$330 million in tubes, bridges under way

I. Third Lincoln tube

The Port of New York Authority broke ground on its $90-million third tube for the Lincoln Tunnel last week in New York City. As 800 guests sat in the Hotel Astor roof garden watching a projection telecast, six officials wielded chrome-plated shovels and picks at the 38th Street site of the New York City shaft, where Gull Contracting Co. has the first $2.5-million contract on the tube.

From the site Port Authority Chairman Howard S. Cullman told the guests:

The third tube will extend from Manhattan to Weehawken, N. J. (see map below), to add two lanes to the existing four lanes of the Lincoln Tunnel. When completed in 1957, it will increase by 50% the annual capacity of the tunnel and will double its peak-hour capacity.

Of the $90-million cost, $40 million will be spent on new approaches and connections to the tunnel on both sides of the Hudson River—$23.5 million in Manhattan and $11.5 million in New Jersey. The New Jersey connection plans are being reviewed by DeLeuw and Brill, consulting engineers for Weehawken. In addition, the authority has agreed to constructing—if the City of New York requests it to, and if traffic reaches 30,000,000 vehicles a year—an interchange system connection to the West Side Highway of Manhattan at about $5 million.

• **The big picture**—The south tube of the Lincoln Tunnel was opened to traffic on Dec. 22, 1937. The north tube was opened Feb. 1, 1945. Since then tunnel traffic has tripled and is expected to reach about 20,000,000 vehicles this year.

"For more than a year we have been working on plans for another two-tube crossing of the Hudson that we expect will be located between the Holland Tunnel and the Lincoln Tunnel. It would appear that this fourth Port Authority Hudson crossing will cost upwards of $200 million," Cullman disclosed.

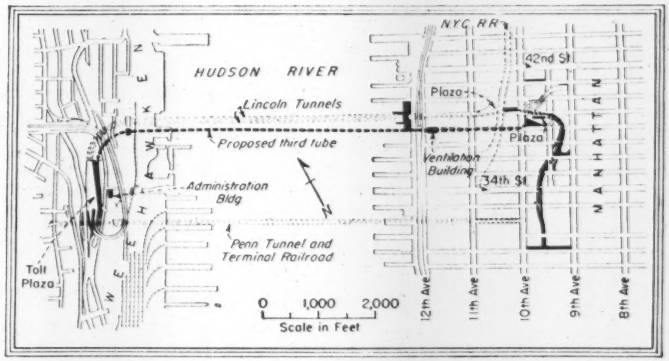
Port Authority crossings—George Washington Bridge, Holland Tunnel and Lincoln Tunnel—have already cost almost $245 million. The $90-million price tag on the third Lincoln Tunnel tube is more than the $87-million cost of the two existing tubes and approaches.

"These facilities have been provided without cost to the general taxpayer," Cullman reported. Port Authority terminal and transportation facilities, through the general pooling of revenues, are self-supporting. We do not plan to increase the tolls for use of the third tube or the fourth Hudson River crossing."

Ground was broken at the land shaft which will be the foundation for the third tube's New York ventilation building and will also contain a section of the tunnel roadway. The New York land shaft and the 360 ft of land tunnel of the first contract will take an estimated total 21 months to complete.

• **Facts and figures**—Here are some statistical data on the third tube:

Length of tunnel, portal to portal—7,944 ft; section of tunnel between two shafts—5,400 ft; external tunnel diameter—31 ft; width of roadway—21 ft, 6 in.; operating headroom—13 ft; maximum depth from mean high tide to roadway—97 ft; steel and cast iron tunnel segments—30,000 pieces weighing a total of 48,000 tons; concrete—35,000 cu. yd; ceramic tile squares, 4½ in. square—2,600,000 pieces.



II. Hampton Roads

A $55-million tunnel-bridge-causeway connecting Willoughby Spit and Phoebus, Va., is recommended by the engineering firm of Howard Needles, Tammen and Bergendoff, of New York, as the most feasible highway route across Hampton Roads.

The firm made the survey at the request of the Virginia Department of Highways. The route it recommended is one of three it studied and construction for it would be cheapest.

Willoughby Spit is the most northeasterly point of Norfolk, lying between Hampton Roads and Chesapeake Bay opposite Old Point Comfort. Phoebus, until this year a town, is a part of the city of Hampton. It lies between Old Point Comfort and Newport News.

Elmer K. Timby of the engineering firm told the Virginia highway department and officials of the Hampton Roads cities, that the project is feasible financially and that, if authorized, it could be started in 1953 and opened to traffic in 1956.

Timby said further that his firm recommends (if the Willoughby-Phoebus route is given approval by the Army Corps of Engineers) that the department:

- Obtain borings along the route.
- Have prepared, based on these borings and additional field surveys, a more detailed estimate of construction cost and amount of bond issue required.
- Determine by extensive traffic surveys a more exact estimate of anticipated revenue.

• **Tunnels and causeways**—Little actual engineering has been done on the project. In general, the plan proposes an express road and causeway to skirt the edge of Willoughby Spit and pass under the main Hampton Roads channel by means of a tunnel 7,200-ft long, then to come to the surface as another causeway on the Phoebus side of Hampton Roads, there connecting with several highways.

The estimated cost of the proposed project is broken down as follows:

- Cost of structures $36 million with an overall cost of construction of $45 million.
- Rights of way $1.3 million.
- Contingencies $4 million.
- Engineering $3.7 million.
- Administration and legal costs $1 million.

If the project is authorized, the total amount of bonds to be sold will be $81.5 million. The additional funds

will be used to refinance the James River Bridge system, now state-owned, and with which the new tunnel would compete; to refinance the new York River Bridge; to liquidate the two lines of the Chesapeake Ferry, state-owned and which operate across Hampton Roads; and to construct a new bridge, costing about $12.3 million across the Rappahannock River.

Portsmouth motorists probably would continue to use the James River Bridge system, built in 1928, which puts Portsmouth and Newport News within 30 minutes of each other.

The route recommended by the engineering firm is one to which representatives of the Army and Navy have given their unofficial approval. The services had opposed any plan that provided for the bridging of any channel used by naval vessels. The Navy also opposed tunneling under its Hampton Roads anchorage.

• **Knitting together**—Construction of the Hampton Roads Tunnel would mark a major, and perhaps the biggest, step in Virginia's program to bring its water-divided communities closer together by bridge and tunnel. Two of these major projects were opened this year. These were the $23-million bridge-tunnel connecting Norfolk and Portsmouth, opened May 23 (ENR May 22, p. 44), and the George P. Coleman Memorial Bridge spanning the York River at Yorktown, opened May 7 (ENR May 8, p. 50).

Neighboring Maryland last summer opened its new bridge across Chesapeake Bay (ENR Aug. 7, p. 40). In earlier years the Potomac River Bridge, connecting Virginia and Maryland, and the James River Bridge system, linking the Virginia Peninsula to southern Virginia were built.

The traffic problem of Virginia, whose eastern area is divided by Chesapeake Bay and the James, Elizabeth, York, Rappahannock, Potomac and smaller rivers, can be emphasized by statistics:

The main bridge in the James River system is 4.9 mi long. Norfolk and Portsmouth are so close that there is no toll on telephone calls from one to the other, yet the cost of their bridge-tunnel was about $23 million. The tunnel alone in the proposed Hampton Roads project is 7,200-ft long and the draw on the York River Bridge is one of the biggest of its kind.

The biggest tunnel job of all is something that is hardly dreamed about, much less talked of. This would be a tube between Eastern Shore and Little Creek, near Norfolk. The distance is 21 mi and modern ferries require an hour and 20 minutes to travel it. Cost of building a tunnel across there? Nobody knows.

III. San Francisco bridge

California will have a new toll bridge across San Francisco Bay.

This was assured Sept. 26 when the California Toll Bridge Authority headed by Gov. Earl Warren, approved plans for issuance of $72 million in revenue bonds to finance the San Rafael-Richmond crossing.

The new span will cross the north arm of the bay and should not be confused with the controversial proposed second crossing from San Francisco to Oakland.

The authority authorized the immediate issuance of $62 million in bonds for the toll structure of which $50 million is believed enough to cover construction cost, including land, rights of way, property and engineering expenses.

A total of $6.5 million will be for the payment of interest on the bonds during the actual construction period and for six months thereafter and $5.5 million as a construction reserve.

• **Structure described** — The plans adopted by the authority upon the recommendation of the state Department of Public Works call for a high level structure with provision made for a lower level if and when the traffic volume justifies. The 36-ft wide bridge will carry two traffic lanes and will be converted to three in each direction when the second deck is added.

Coverdale & Colpitts of New York, engineering consultants, estimate traffic for the first full year of operation at 4,000,000 vehicles.

Assuming a weighted average toll for all vehicles, including commuter vehicles, trucks and passenger automobiles, of 82 cents each, the estimated resulting revenues would be about $3 million for that year. Tolls on autos would be 75 cents and truck tolls by size would start at $1.25.

The engineering firm estimated, and the Department of Public Works concurred, that for the first five years maintenance and operation expenses would total $435,000 a year.

The bridge, the reports show, will be fully self-supporting from its own tolls, and the initial costs should be paid off and retired within a period of 21 years after operations begin.

Ralph A. Tudor, consulting engineer for the toll bridge authority, indicated work could begin before the year is out and with good fortune the span could be up in three years.

The design and construction plans call for a structure 4 mi long, to be constructed with two steel cantilever spans having horizontal clearances of 1,000 ft and vertical clearance of 185 ft over the main navigation channel and 135 ft over the secondary channel.

• **Opposition encountered**—Like most public works projects, the San Rafael-Richmond Bridge plans did not gain the full accord of the persons affected.

Strong opposition developed from advocates of a proposal to dam the bay, thus making the barrier a multiple purpose project—serving as a vehicle crossing, stopping salt water encroachment and creating a huge fresh water lake which would supplement the water supply of the fast-growing San Francisco Bay and peninsula area.

Tudor said the possibility of combining a highway crossing with an earthfill barrier was studied and found "expensive beyond the means of the toll bridge authority to finance."

The department explained that provision will be made in the resolution or indenture under which revenue bonds may be issued for permission to construct any salt water barrier without limitation of distance from the bridge, with these restrictions:

Revenue bonds issued for the bridge either must be retired simultaneously with the issuance of bonds for any toll crossing over the top of the salt water barrier or be secured by a first lien both on the revenues of the bridge and any other such competitive toll highway crossing over the salt water barrier.

Governor Warren emphasized whatever action was taken would not be an inference that "we oppose any water program."

"A salt water barrier has been dreamed of for over 20 years," he added. "I don't know whether it is feasible. I wish the legislature would appropriate money for the studies that would let us know."

IV. Delaware bridge

The Delaware River Port Authority took the first step last week on its first project, a $91-million bridge linking Philadelphia, Pa. and Gloucester, N. J.

The authority appointed the firms of Amman and Whitney of New York and Modjeski and Masters of Harrisburg, Pa., to act jointly in designing and supervising construction.

The engineering firms were retained jointly at a fee of 5½% of the construction costs on the bridge proper. These costs are estimated at $61 million. The authority at the same time voted to include a seventh lane in the plans, raising the cost $2.75 million.

AFL convention decides seaway stand

The AFL convention held its final meetings last week in the Commodore Hotel, in New York City. Two issues which had been in dispute because of differences in resolutions—the Central Arizona Project and the St. Lawrence Seaway Project—were settled in favor of the executive council of the AFL.

The executive council had favored the Arizona project and opposed the seaway project. Opposing the Arizona project was the California State Federation. In favor of the seaway project was the Wisconsin State Federation (ENR Sept. 25, p. 31).

The executive council report and recommendations were the first to be voted on and, in consequence, since the report was accepted as read, the subsequent resolutions offered by both the California and Wisconsin federations died.

• **Other business transacted**—Aside from these two differences, the rest of the business of the convention—including backing Adlai Stevenson and re-electing the same officers who have led the union for the past year—went smoothly.

The convention ratified resolutions favoring:

- Public housing—135,000 units yearly.
- Slum clearance and urban development.
- Rent control.
- Federal aid for school construction.
- Walsh-Healy Public Contracts Act, as originally written.
- Plattsburg cantonment.
- Ice Harbor Dam.
- $1.25 minimum wage.
- Development of the Rio Grande valley.

• **Building Trades Department report**—The report of the Building Trades Department was also adopted by the convention.

The report said that charters were issued to five newly organized local building and construction trades councils and two newly organized state councils. This meant that the total of local councils is now 571 and the total of state councils has increased to 19.

Prospects for full employment in the building trades during the coming year are most encouraging, said the report.

The report also covered the activities of the department in the field of jurisdictional disputes; the apprenticeship training program, and the fight against the Taft-Hartley act, in which it was an enthusiastic fighter.

No money for strike-idle despite later discharge

An important new point in the interpretation of the California law banning strike-idled workers from unemployment insurance benefits has been determined by the state's supreme court.

In a 6-to-1 decision, the Court held mill workers of the Pacific Lumber Co. of Scotia, Calif., ineligible for benefits despite the fact that the company had served discharge notices after they had refused to go through a woodsmen's picket line.

The supreme court's stand was that the trade dispute was the reason for the idleness.

The state law makes ineligible for unemployment insurance benefits those who are out of work because of a strike.

The Humboldt County Superior Court and the District Court of Appeals had ruled the mill workers were entitled to benefits on the ground that they were discharged.

The supreme court's reversal does not take issue with this opinion of the lower courts but carried the question a step further by deciding the firing made little difference because the mill workers refused to cross the picket line and would have been idle anyway.

In reciting the facts, the supreme court opinion pointed out that the mill workers became idle in 1946 when they declined to cross the picket line set up by the woodsmen.

The company thereafter attempted to reopen its mill but when an insufficient number of workers showed up, notices of employment termination were given.

$92,000 overpayments

The Wage Stabilization Board said last week that two Phoenix, Ariz., building firms have been charged with making $92,000 in wage payments in violation of the stabilization act.

The two firms named—F. and S. Construction Co., Inc., and the Hoffman Plastering Co., of Phoenix—have been building housing projects in Colorado, Arizona, New Mexico and Ohio.

WSB said that it had received complaints in the Denver area that the two firms were paying above ceiling rates to plasterers and lathers.

The complaints said that $626,000 in wages was involved and that $92,000 of this was in excess of permissible wage rates.

The charges were filed by the Denver Regional Wage Stabilization Board with the National (wage) Enforcement Commission last week in Washington, D. C. The board said the case has been under investigation for several months.

2 Milwaukee unions guilty of interference

Two Milwaukee AFL building trades unions were found guilty by the state Employment Relations Board of attempting to interfere with the business operations of two separate contractors.

Named in one case by the board was the sheet metal workers' union, and in the other Local 601 of the AFL Steamfitters' Union.

The board found that the sheet metal workers' union had sought to put the Strutz Heating & Air Conditioning Co. out of business by refusing to supply the firm with union help and by picketing its jobs.

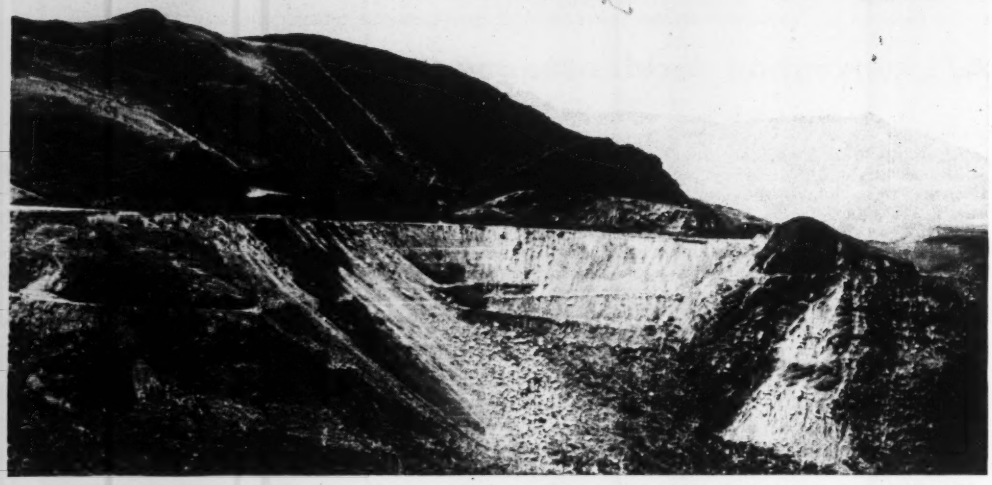
Albert E. Strutz, Jr., operator of the business, had been a journeyman in the union and his difficulties began when he tried to go into business for himself.

In the case involving the steamfitters' union, the board found that Elmer Mayer, a union business agent, had threatened to picket a job of the Koehler Refrigeration Service, "with the intention of injuring" the firm's business.

The board found that Fred Koehler, operator of the firm, had asked to sign up with the union as a contractor, or to join the union, if that were necessary.

Koehler, according to the findings, was advised by Gerald J. Enright, union business manager, that the union could not sign an agreement unless he employed a full-time journeyman and that Koehler must have five years' experience in the refrigeration business before being allowed to take an examination for the purpose of becoming a journeyman.

Both Strutz and Koehler are at the present time affiliated with independent unions.



THE MOUNTAINOUS CHARACTER of much of the country through which the highway from Cochabamba to Santa Cruz in Bolivia is being built calls for heavy grading and costly access roads.

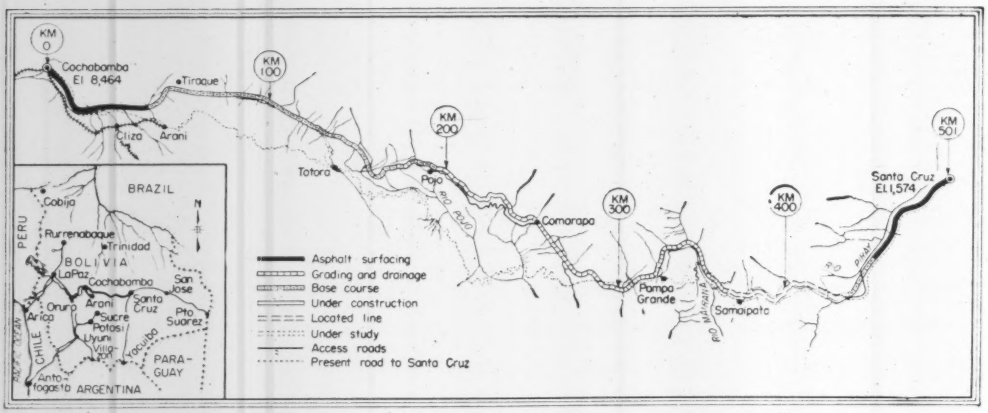
Second try promises success on spectacular mountain highway

GRADING WORK on a modern highway between Cochabamba, in the mountainous part of Bolivia, and Santa Cruz, in the upper reaches of the Amazon River basin, is now so far advanced that completion of this difficult project can be confidently expected by December, 1953.

This is the second attempt to provide a much-needed highway connection between the important mining communities of Bolivia's "altiplano" region, where food production is difficult and fuel is non-existent, and the lower central part of the country which is potentially capable of producing plentiful food supplies and contains large proven reserves of petroleum.

The location of the highway and the preparation of detailed plans and quantities was begun by the U. S. Bureau of Public Roads in 1943 and was completed by them in 1948 at a cost of $2,363,500. This in itself was a difficult and arduous task on account of the rough terrain and lack of roads.

The highway when completed will have a total length of 312 miles (500 kms.). From Cochabamba, at El. 8,464, it must climb over several ranges



STARTING AT COCHABAMBA, at an elevation of over 8,000 ft, the highway runs in a general easterly direction, climbing to around 12,000 ft near Km 75 before it begins to descend to the low country around Santa Cruz.

of mountains, the highest pass being at an elevation of 12,000 ft., near Km 75, before debouching on the level plains about 35 miles out of Santa Cruz. The latter city is at El. 1,574.

• **Start made in 1945**—The first attempt to build this highway was made in 1945 (ENR, Oct. 3, 1946, p. 67). At that time the Bolivian Development Corporation (Corporación Boliviana de Fomento) borrowed $25 million from the U. S. Export-Import Bank (ENR, July 26, 1945, p. 88) and let a $9,500,000 construction contract to the Compañía McGraw-Warren, S. A., for the construction of the highway. The McGraw-Warren contract did not include the direct purchase of the construction equipment, which was handled by a purchasing commission under the direction of the Bolivian Development Corp., with the assistance of the American government.

That contract provided for the utilization of Bolivian labor to the greatest possible extent. The total cost of the project at that time was estimated at $12 million.

The McGraw-Warren project ran into difficulties from the start, largely due to the war conditions plus labor unrest in Bolivia. Essential equipment and parts were almost impossible to obtain and substitutions were not always suitable and in some cases were by necessity second-hand. In the end work was shut down in 1947 with about 25% of the highway completed.

The Bolivian Development Corp. continued the construction with its own forces until August of 1949, when it too was forced to shut down for lack of funds.

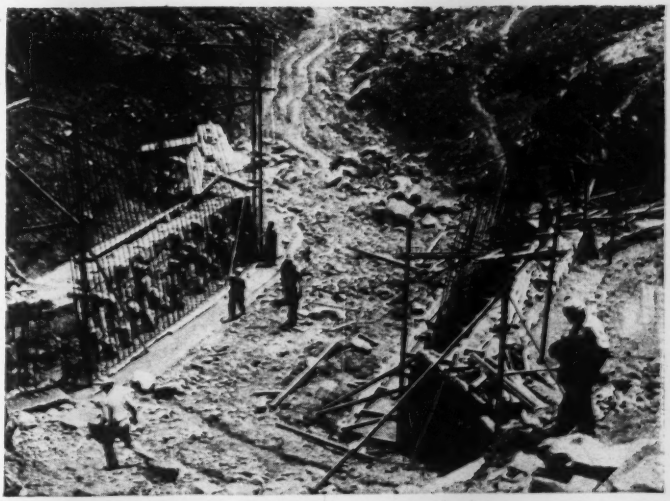
At that time there had been expended from all sources the following sums of money:

Cost of studies, PRA	$2,363,000
McGraw-Warren contract	7,349,000
Other contracts	1,876,000
Bolivian Development Corp., (1947 to Aug 1950)	2,443,000

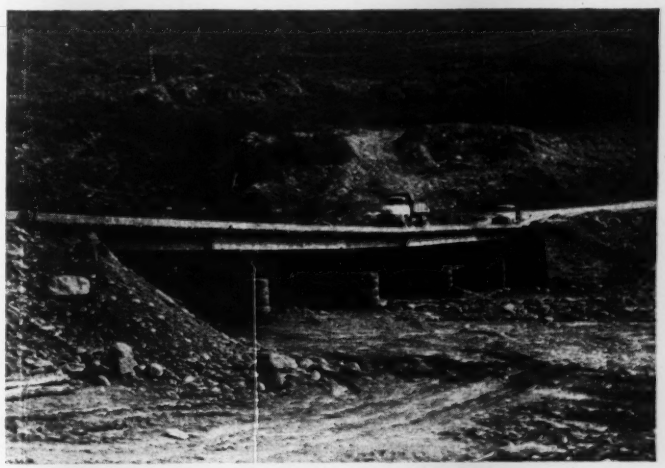
In 1949 the project was revived after the Export-Import Bank had approved a $16 million loan to the Bolivian Development Corporation and the Bolivian Government had appropriated the equivalent of $8 million in its own currency for the completion of the project.

The following year (February 1950) a contract for consulting engineering services and supervision of construction was let to Knappen-Tippetts-Abbett-McCarthy Engineers, New York, and in August, 1950, a construction contract was awarded to Macco Panpacific Co., Paramount, Calif., and Balboa, C. Z. This contract covered the following principal items:

1. Reconditioning of existing road-building equipment left over from the original work.
2. Purchasing of more than $2.5 million of new construction equipment.
3. Completion of the highway itself, which can be divided as follows:
   - 280 kilometers of grading & drainage structures.
   - 316 kilometers of base course.
   - 420 kilometers of asphalt paving.



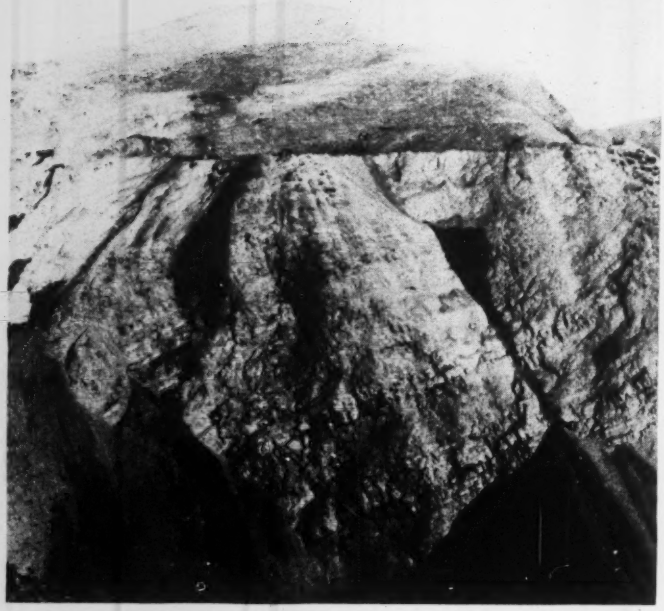
BRIDGE ABUTMENTS frequently are an interesting combination of modern reinforced concrete and age-old masonry.



A TEMPORARY DECK was put on this bridge over the Pojo River to get equipment across the valley for work ahead before the permanent concrete deck could be built.

• **Difficult construction**—The current work has not been without its difficulties, as can be seen by the accompanying photos. Progress is continually plagued by earth slides caused by a movement of glacial till on a contact plain of underlying blue clay. This frequently is lubricated by ground water, resulting in a slow downhill movement of the overlying mass.

To remedy this situation, benching of cuts and subdrainage have been employed, but neither method offers a certain solution. In most cases the contractor must wait until the slide has come to rest and then dig out to



FOR THIS SIDEHILL CUT, 350,000 cubic meters of rock were moved in a length of 700 meters. Disposal presented no long-haul problem. The highest cut was 300 ft above grade for the finished highway.

a point where the ground reaches the angle of repose.

All equipment, parts, materials, fuel and food must be transported to the job from seacoast ports, the major port being at Antofagasta in Chile. From here, material is shipped by railroad to Cochabamba and then hauled by truck to the individual construction camps. At present the average truck haul is 200 km., and this distance will increase as construction progresses.

Construction of access roads is a major problem because of the rugged terrain in the mountainous sections and the dense vegetation in the humid country near the eastern end. Some of these roads require a large amount of grading and temporary bridges of substantial design. Bailey bridges are being used by the contractor for temporary crossings of major streams.

As will be seen from the accompanying map, grading has been completed or is under way on all but about 100 km near the eastern end, where location work still is in progress. Nearly 10 million cubic yards of earth and rock excavation will be required to complete the project plus an allowance for another million that may have to be moved as the result of slides.

Major structures are a combination of masonry construction, reinforced concrete and steel. This combination is due to the cost of transporting steel and cement to the job, to the lack of ample supplies of sound aggregates for concrete, and to a desire to use native talent to the greatest possible extent. Corrugated metal is being used extensively for culverts because of the ease with which it can be transported to isolated points.

• **Design standards**—The highway is designed for H15-S12 loading, a speed of 80km per hour (50 mph) and a minimum vertical sight distance of 150 meters (500 ft.). The minimum curve radius is 30m., and all curves with radius less than 191m. are being superelevated and provided with spirals. The maximum grade will be 7 percent compensated for curvature.

A surface course 5m. in width is specified on a base 5.3m. wide. Shoulders are 1m. wide. The base course has an average depth of 0.15m. (6 in.) and consists of crusher run stone or gravel graded as follows: passing a 2-in. screen, 100%; 1-in. 50 to 80%; No. 4, 20 to 50%; No. 200, 0 to 12%. Plasticity index not to exceed 6.

Specifications require that the upper 20 in. of all fills shall be of selected material spread in 6-in. layers and compacted to 90 percent of maximum density.

After priming with MC asphalt, the surfacing is to be an 80 lb. per square meter armor coat using about 0.8 gal. of RC2 asphalt in two applications.

• **Bolivian labor used**—Bolivian labor is being used to the greatest possible extent. The same requirement applies to the engineering and supervising work. Currently the native labor force amounts to roughly 2,900, while the total number of North Americans is around 70.

For Knappen-Tippetts-Abbett-McCarthy, Gerald S. Rinehart is project engineer, and for Macco ,Panpacific Co., the contractor, Max Winter, Jr. is project manager and L. W. Jones is general superintendent. In charge of operations for the Bolivian Development Corp. is Francisco d'Avis.

Guatemala to seek help to finish its Pan-Am. road

The newly-appointed Guatemalan Ambassador to the United States, Guillermo Toriello, says that one of his first objectives will be to endeavor to obtain the financial assistance of the United States for the completion of Guatemala's section of the Pan-American highway. For this purpose the U. S. has already paid out about $15 million in cash and technical assistance; but about 25 miles of the highway near the Mexican border remains unconstructed.

The U. S. Bureau of Public Roads offered to contribute $3 million for the final construction of that sector of the highway providing Guatemala would add a million dollars but the negotiations broke down and the funds were allocated to Costa Rica and Nicaragua. Work on the road practically stopped but now, apparently, Guatemala wants to renew negotiations for U. S. assistance in completing the project.

• **A power project also**—The Guatemalan government has invited the Westinghouse Electric International Corp. to make preliminary surveys prior to submitting bids on an estimated $6-million hydroelectric installation in the southwestern section of the country. Surveys have already been made by the Empresa Electrica de Guatemala, subsidiary of the American Foreign Power Corp. Officials of that concern have warned the government that a severe power shortage will develop there by next year unless something is done about it now. One plan is to finance through the U. S. Export-Import Bank with a loan to be guaranteed by the Guatemalan government.

Constant Pounding Causes this—

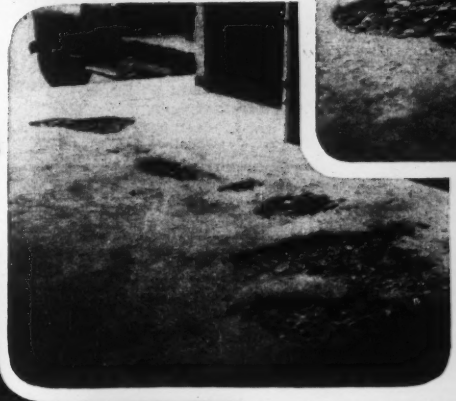
How THORITE Patching Mortar, repaired and added strength to loading platform in 30 minutes

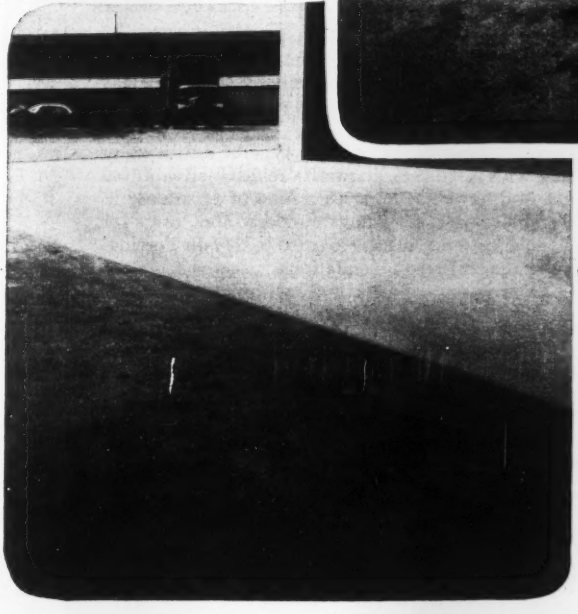
A QUICK PATCH for concrete walls and floors

BEFORE

Largest area is 2' long and 18" wide, 1½" deep.

Smaller areas, around large one, is in complete state of disintegration.





AFTER

Thorite Patching Mortar has been brushed and troweled into patch and leveled, even with surrounding surfaces.

Floor area was back in use, for heavy warehouse trucks, 30 minutes after beginning work.

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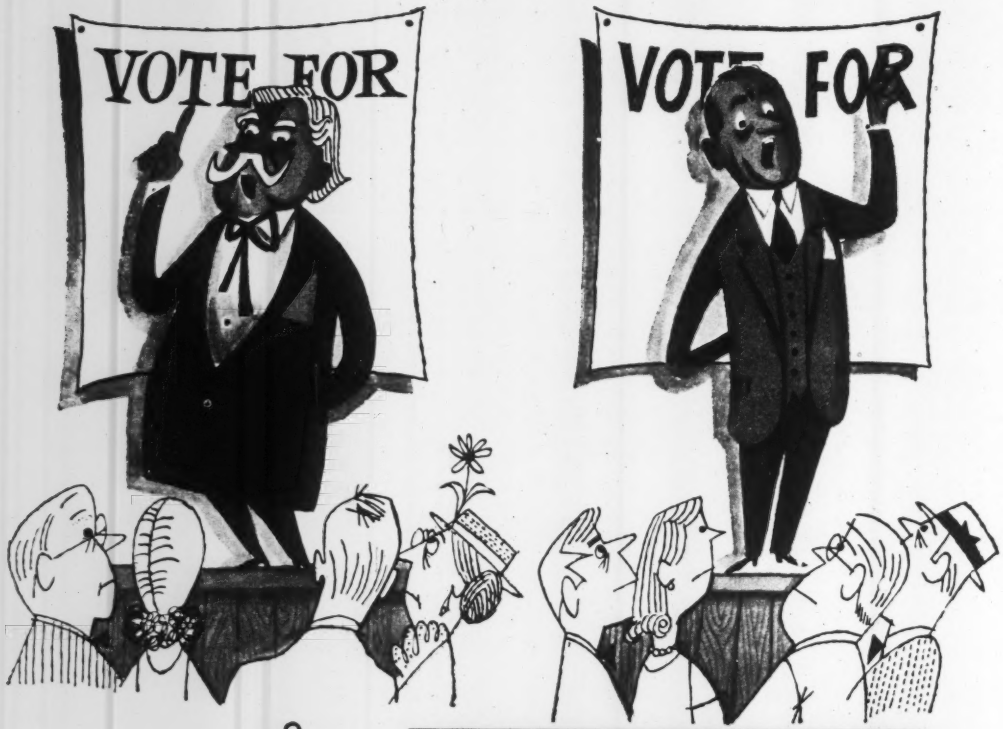
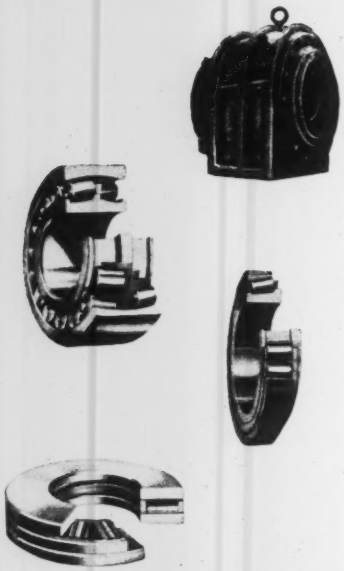


which one?



There are a lot of conflicting claims about which type of anti-friction bearing is best. Actually, each type has its advantages. The problem is to decide which is best for the job at hand.

Torrington makes every basic type of anti-friction bearing. Our engineers know the relative advantages of each and have accumulated a fund of experience in their applications. Leading builders and users of mechanical equipment have learned to rely on Torrington for impartial recommendations.

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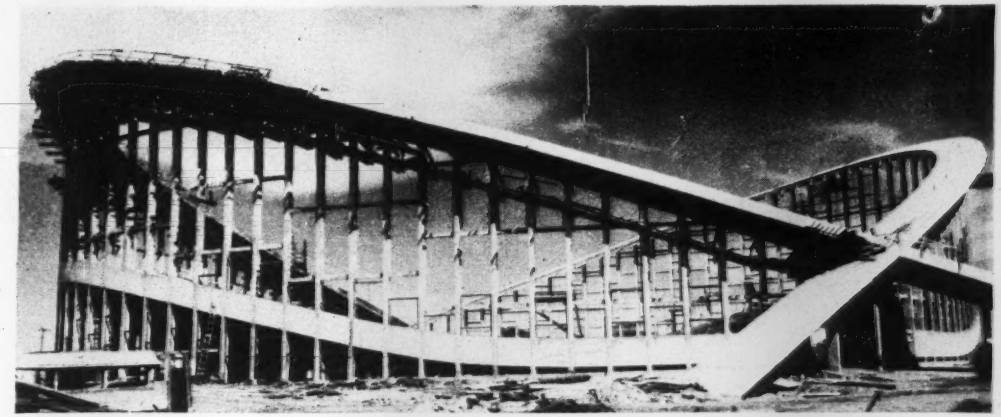


OPPOSING ARCHES sweep in graceful curves atop the wall columns of a livestock arena at Raleigh, N. C. Steel strands strung between them will carry a saddle-shape roof deck. (Wide World photos)

Something new in framing:

Oblique concrete arches to carry steel catenary roof

NOT A SINGLE COLUMN will obstruct the view from the stands of the 300-ft dia livestock judging pavilion now being built at the North Carolina State Fair Grounds, Raleigh, N. C. The roof will be suspended on steel strands strung from the outer walls.

A pair of reinforced concrete arches on top of the walls will take the catenary pull of the wires. The arches, in turn, rest on slender concrete columns, which take the vertical load.

• **Low costs reported**—The designers believe this unique structural framing to be highly efficient. It utilizes construction materials to their best advantage—concrete in compression and high-strength steel in tension.

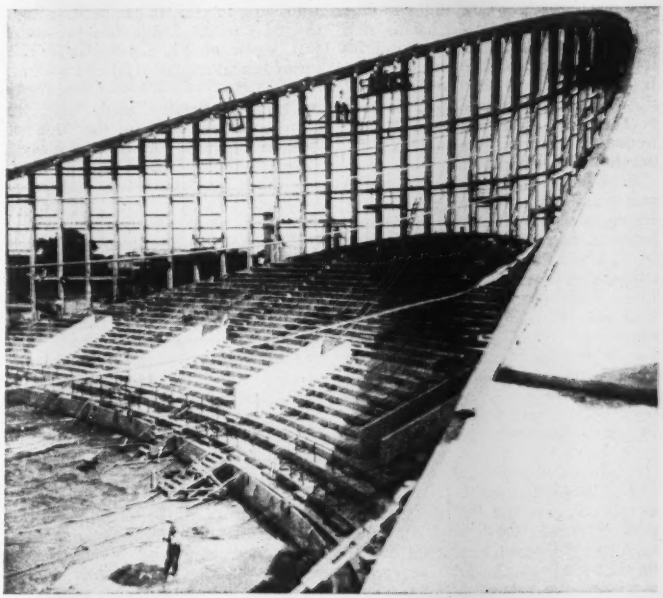
Cost figures appear to bear out this contention: The building is being erected for $1,300,000, which averages between 35 and 40 c per cu ft of space enclosed, or about $130 per seat.

The structure will contain concrete stands with permanent seating for 5,500 and temporary seats for 4,500.

• **Saddle-shape roof**—The cable-supported roof over this large unobstructed area will consist of insulated, cellular steel decking and built-up roofing. Following the natural sag of the cables, which form a rectangular grid, the roof will assume the shape of a saddle.

• **Oblique arches**—The pair of arches that support the roof are parabolic in shape. They lie in planes that slope in opposite directions at an angle of about 25 deg with the horizontal. The arches are 14 ft deep in the sloping plane and 30 in. wide, but are coffered on the under side to keep their weight down. Rising to a height of 85 ft at their apexes, they intersect 25 ft above grade, then continue down to terminate in concrete abutments.

The building is expected to be completed by the middle of this month. It was designed by William Henley Deitrick, architect, Raleigh, N. C., from an original design by the late Matthew Nowicki. Severud-Elstad-Krueger, of New York City, are the consulting engineers. Muirhead Construction Co. is the general contractor.



CONCRETE STANDS lie at the base of the columns that support the arches. The columns will also serve as window mullions.

A LEVEE NEARS COMPLETION. This is levee L-40 near West Palm Beach (see map) built to form one of the areas where flood waters are to be stored for agricultural use and to add by percolation to the underground supplies serving the east coast cities.

Everglades floods to be controlled

FLOOD CONTROL that is radically different from the type that is applied to flood waters elsewhere in the U. S. has been started in the Everglades of Florida.

The work now in hand is the first stage of a program that will extend over at least ten years and will free 2.3 million acres of land having rich agricultural and grazing possibilities from the danger of frequent overflow. It will make possible the storage of flood waters for use in dry seasons and at the same time will add to the underground water resources of the developed coastal region.

Back of the sandy areas close to the east coast of central Florida is a vast region of lakes, marshes, and prairie land, no part of which is more than 80 ft above sea level. Some of this region drains northward into the St. Johns River and the remainder drains west into the Kissimmee River and south into Lake Okeechobee, depending in part on the saturation of the ground and the winds.

Lake Okeechobee is a nearly circular body of fresh water 730 sq mi in area. Originally its surface was from 12 to 19 ft above sea level and it had no well-defined outlet. At higher levels its waters then either spread out over the Everglades—a region of grassy marsh land 40 miles wide and 100 miles long lying mostly to the south of the lake—or spilled over into the valley of the Caloosahatchee River to the west.

Water from the Everglades either flowed eastward through small river channels cut through the somewhat higher sandy regions along the east coast—where the resort cities now are located—or escaped to the ocean at the lower end of the state.

Rainfall over this area varies widely from year to year. It has been as high as 102.4 in. at Dania (on the coast just south of Ft. Lauderdale). The mean annual rainfall at Miami is 58 in.

• **Frequent floods**—Floods due to heavy rainfall and to the lack of definite drainage channels have been frequent in the whole region. During rainy weather, marsh and muck become saturated and the water spreads in sheets ranging from a few inches to a few feet deep over much of the region, inundating agricultural land, grazing lands and citrus groves, to say nothing of the little towns and connecting roads. Often this type of flooding continues for weeks.

During the 1947 flood the streams through the sand barrier along the east coast could not carry the flood flows and large areas in Ft. Lauderdale, West Palm Beach and Miami also were flooded. Damage that year alone for the entire area was estimated at $59,000,000.

Because of this flooding of the hinterland, early settlers organized drainage districts and began digging drainage canals. Subsequently, as the canals were enlarged and connected they were used as navigation channels to serve the region. Locks and control works were built in some of the larger ones. Still later, roads were graded on the tops of the spoil banks along the canals, and as they developed into a connected network, navigation declined, except on the cross-state waterway through Lake Okeechobee.

Drainage ditches helped to take water off the land in wet seasons, but they also took it away in dry years. As a result, there were crop failures in dry years and fire spread rapidly through grass lands and dried-out marshes, burning the rich muck soil.

The richest muck lands lie to the south of Lake Okeechobee. There the surface averages around 17 ft above sea level and the muck is 8 to 14 ft deep over part of the underlying soft limestone or marl. Farther south, in the latitude of Miami, the surface is only 6 to 7 ft above sea level and the muck thins out to a depth of only about one foot.

• **Hurricanes do great damage**—In 1926 and again in 1928, hurricane winds drove the waters of Lake Okeechobee out over the adjacent agricultural lands and villages. In the terrific 1928 storm, 2,300 people were drowned. That disaster caused Congress to authorize the construction of levees along much of the shore of Lake Okeechobee, with hurricane gates in the levees where major drainage canals connect with the lake.

Those levees and gates were built

by the Corps of Engineers in 1934-36. They have eliminated the danger of storm-driven floods along the southern and southeastern shores and at Okeechobee on the north shore, but flooding due to excessive rainfall remaining on developed areas still is widespread and does much damage.

Similar flooding is widespread over the truck farms and pasture lands in the upper St. Johns River basin and the Kissimmee River basin due to the inadequate capacity of the stream channels. On an average of once in six years major floods cover 1,050,000 acres in the St. Johns basin and 598,000 acres in the Kissimmee basin and adjoining regions.

At the southern end of the Everglades, where the general elevation is low, the problem is somewhat different. Relatively high groundwater levels must be maintained to combat salt water intrusion in the well fields from which the domestic and agricultural water is drawn. On the basis that each foot of fresh water above sea level keeps salt water 40 ft below sea level, a groundwater elevation of 2½ ft is desired to provide a fresh-water aquifer 100 ft deep in this area.

• A comprehensive plan drawn—A plan to provide flood relief for this vast area and to conserve flood waters for agricultural and domestic purposes was submitted to Congress in 1948, and was authorized by the flood-control act of that year. Under it, many miles of drainage canals are being enlarged and deepened to facilitate the rapid removal of flood waters, and new canals are being dug. But as the deeper canals would result in overdrainage if not controlled, the plan calls for controlled spillways at the lower end of the drainage canals so that their greater carrying capacity may be used at time of peak demand and yet can be sharply curtailed when the need is past.

These spillway structures also will serve as barriers to encroachment of salt water during the low water stages of the canals.

The storage capacity of Lake Okeechobee is to be increased by construction of additional levees along its shores. Similarly, the storage capacity of the chain of lakes at the headwaters of the Kissimmee and St. Johns Rivers is to be materially increased by dams and controls works.

Artificial storage of large quantities of water is to be provided by the construction of three conservation reservoirs south and east of the valuable agricultural lands lying immediately south of Lake Okeechobee. These reservoirs are being formed by dikes that ultimately will enclose 1,500 sq mi of the Everglades where the soil is poor and of shallow depth. Material for the dikes is being obtained through enlargement of existing drainage canals—which they parallel—or by digging new canals that will be connected to the existing canals to produce a system to serve the needs of the area for both flood control and water supply.

COST ESTIMATES FOR CENTRAL FLORIDA PROJECT (1947 Prices)

Canals	$75,229,000
Levees	79,244,000
Control structures	43,926,000
Railroad bridges	1,625,000
Highway bridges	4,044,000
Land and rights-of-way	3,897,000
	$208,135,000

When gravity flow in the agricultural area is not adequate to carry off flood waters, large pumps are to be used to lift water into the conservation pools. These pools will be equipped with outlet gates for release of excess flood waters or water for irrigation in dry seasons.

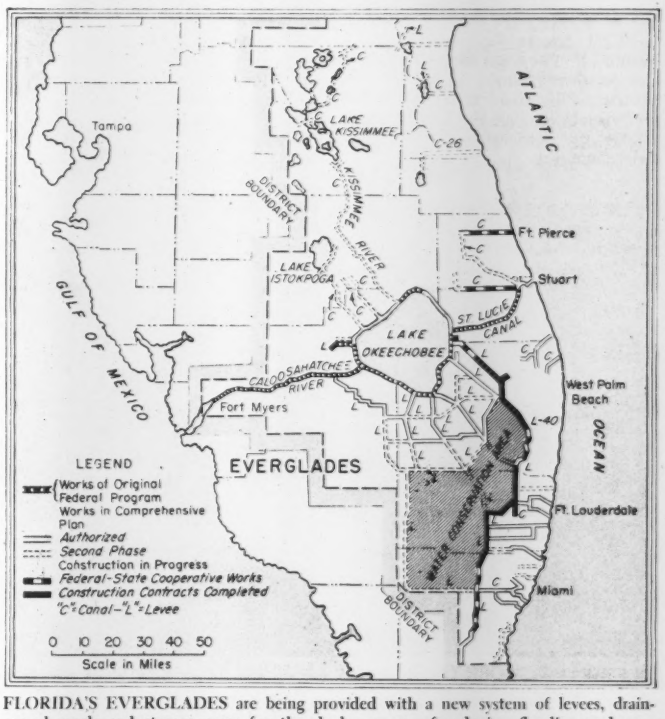
At the southern end of the Everglades, dikes are to be built between the cultivated areas and the coast to keep out storm-driven salt water.

• Cost of the project—The cost of this "comprehensive plan" was set at $208,135,000 by the Corps of Engineers in its 1948 report. Maintenance and operation were then estimated at $3,703,000 annually.

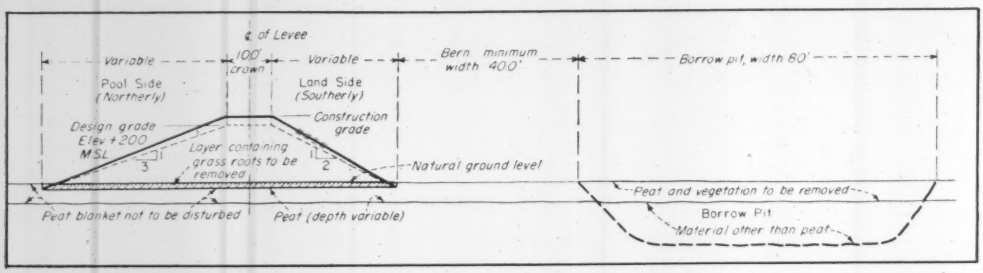
Annual benefits were estimated to total $24,573,000, which were broken down as follows: Prevention of flood damage, $8,251,000; improvement of property, $15,855,000; navigation, $176,000; preservation of fish and wild life, $291,000. Because of these large anticipated benefits, the Board of Engineers for Rivers and Harbors recommended to Congress that local interests should furnish all land and rights-of-way and should make cash contributions of $29,152,000, both to be supplied progressively as the work progressed.

That board also recommended that the federal government should maintain and operate the principal control works, but that the lesser ones should be maintained and operated by local agencies.

The enabling act as passed by Con-



FLORIDA'S EVERGLADES are being provided with a new system of levees, drainage channels and storage areas for the dual purpose of reducing flooding and conserving water for agricultural and domestic use.



TYPICAL CROSS-SECTION through a levee being built to form the water-conservation areas south of Lake Okeechobee.

gress put the local contributions on a percentage basis, specifying that the federal government would pay 61 percent of the cost if state and local interests would provide the remaining 39 percent of the cost. Of the 39 percent costs which are borne by state and local interests, 15 percent is in cash contribution towards construction while the remainder consists of providing all lands, easements and rights-of-way, maintenance and operation and protecting the federal government from liability.

• **Local agency set up**—To simplify the work of acquiring the necessary land and rights-of-way as well as the task of assessing the 15% to be paid by local beneficiaries, the state of Florida, in 1949, set up the Central and Southern Florida Flood Control District. The district will maintain and operate most of the new facilities except the navigation works under federal control.

• **Long range planning**—In the program of the Central and Southern Florida Flood Control District, the plan drawn up by the Army Engineers will form the basis of a much larger development program of land and water resource development that will add $400 million to the $200 million cost of the current project.

• **Stage construction proposed**—Because of the magnitude of the current project and the need for collecting a large amount of information before designs for parts of it can be completed, the Army Engineers recommended to Congress that it be undertaken in four stages.

• **Current operations**—Work already complete or under way is in the first stage. It is estimated to cost $68 million. Principal items, as shown on the accompanying map, are 135 miles of levees, 53 miles of canal enlargement or construction, and construction of control facilities in those canals. All the levee work is completed or under contract.

Of the 858,022 acres required for the conservaion areas, 837,172 have been acquired.

• **Levee building**—Levee construction is largely a dragline operation. Specifications for the levees (see the typical cross-section) were written with that method in view.

Some of the limestone below the peat is soft enough to be excavated by draglines, but much of it requires drilling and blasting ahead of the draglines.

A noteworthy detail of the design is the requirements that vegetable matter on the surface of the marshland be removed from the area on which the levee is to be built and piled beyond the toe of the fill, but that the peat be left in place. This is being done because the peat is a stable material that will compress under the fill and seal the surface of the rock against percolation. The vegetable matter, however, might decay and form a permeable layer at the base of the levee.

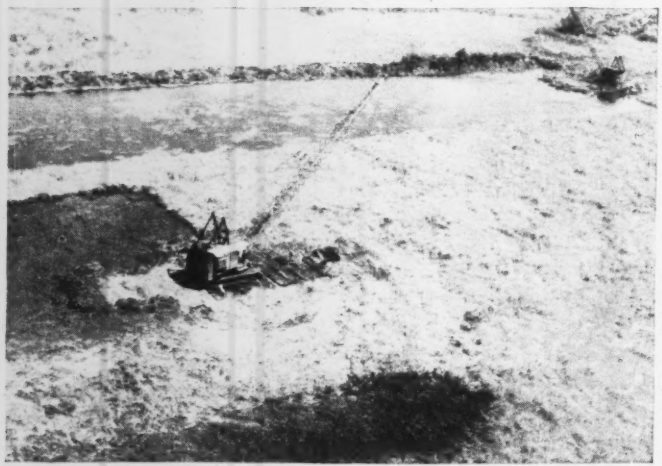
On completion of the fill, this vegetable matter is used as a top dressing for the slopes to encourage the growth of grass.

Leaving the peat in place also makes a large saving in the amount of fill required for the levees. Levee crowns are built sufficiently high initially to allow for compression of the peat.

In the agricultural areas, most of the muck soil is suitable for levee construction.

Construction work is under the direction of the Jacksonville District, Corps of Engineers, Col. H. B. Schull Jr., district engineer. Field work is in charge of the Miami field office, where George R. Coslow is project engineer.

W. Turner Wallis is chief engineer for the flood control district and Lamar Johnson is head of its engineering department. Consulting engineers to the district are Gee & Jenson, West Palm Beach.

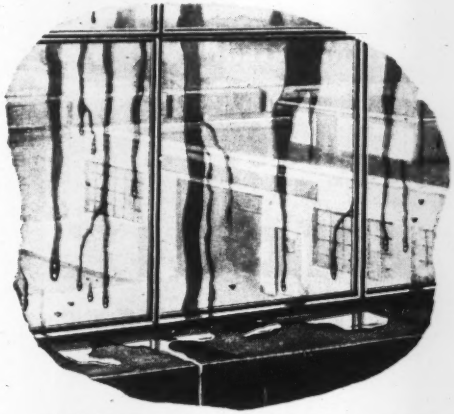


IN STARTING WORK ON A LEVEE, one dragline (upper right) strips peat from the borrowpit area, piling it on the far side, while a second (center) strips vegetation from the top of the peat along the line of the levee, piling it (foreground) clear of the levee site. Draglines must be supported on timber mats.

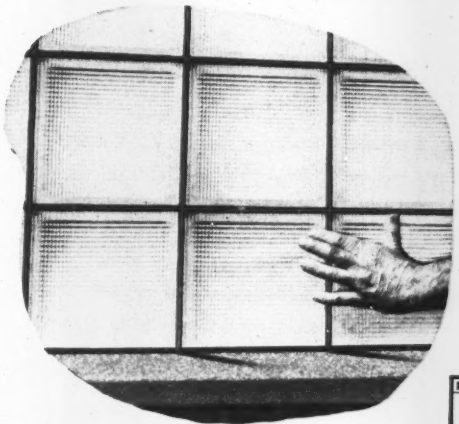
FACTS YOU SHOULD KNOW ABOUT

condensation control

WITH PITTSBURGH CORNING GLASS BLOCKS



QUESTION . . . In our mills, condensation must be minimized. Can PC Glass Blocks effectively help us?



ANSWER . . . PC Glass Blocks can certainly help solve your problem. For they virtually eliminate condensation on light areas. And, where other materials rot, rust, check, or warp, PC Glass Blocks remain unaffected.

In mills, plants and factories where high humidity is necessary to carry on manufacturing operations, or in places where this condition is the result of the processes involved, condensation is a critical problem which must be solved—for the sake of product uniformity, more efficient operation and greater comfort of workers.

This condition can be minimized when PC Glass Blocks are installed in window areas. PC Glass Blocks reduce surface condensation. Fact is, moisture will not condense on the room side of these panels, except under extreme temperature and humidity conditions. PC Glass Blocks avoid troublesome, dripping moisture.

The reason for this is that glass blocks are a *natural insulating medium*. They are hollow "all glass" units with fused seals made at high temperatures and relatively free of entrapped water vapor. The tight seal assures a dry, dead-air space within the block, resulting in an effective heat retardant. PC Glass Blocks have greater insulating value than an 8-inch brick wall; more than twice that of conventional windows.

Here are facts you will do well to consider—in building new structures, modernizing present buildings, or in replacing old, worn-out sash. We will be glad to consult with you on any problem concerned with condensation control or the better daylighting of your buildings. There is no obligation.

Other Facts: PC Glass Blocks cut heating and air-conditioning costs; reduce maintenance expense; admit abundant natural, controlled daylight; make more usable space available; cut off unwanted views; are immediately obtainable.

Distributed by Pittsburgh Plate Glass Company; W. P. Fuller & Co. on the Pacific Coast; Canadian Pittsburgh Industries Ltd., Hobbs Glass Div., in Canada; and by leading distributors of building materials everywhere.

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MANSFIELD — LOUISIANA

Concrete waffle formed with plastic pans

PANS MADE OF PLASTIC, handled in much the same manner as steel forms, were used to form a two-way ribbed-slab roof over a machine shop in Cleveland, Ohio. Construction was by the lift-slab method—thereby successfully demonstrating this method's usefulness for lightweight waffle-type roof systems.

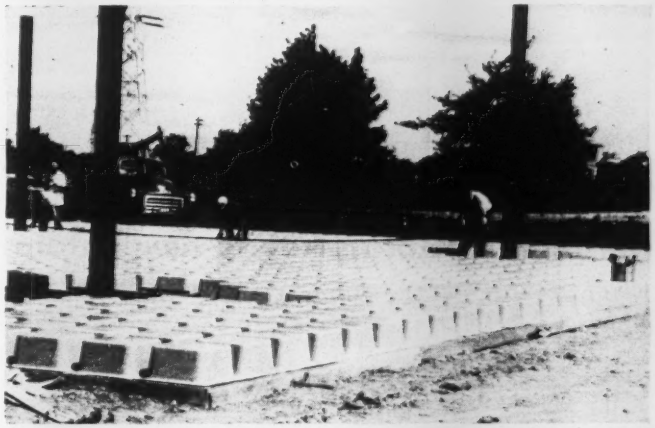
The pans, of Fiberglas-polyester plastic, came through their first trial with flying colors. Four distinct advantages were enumerated by the developers, Ted Meredith and Roy Brown, president and vice-president, respectively, of the Ohio Lift-Slab Co. of Cleveland. The plastic pans . . .

1) require no oiling before or after use,

2) have a rubber-like resiliency, which practically eliminates dents, cracks and breaks,

3) are handled easily because of their light weight, and

4) won't rust or corrode.

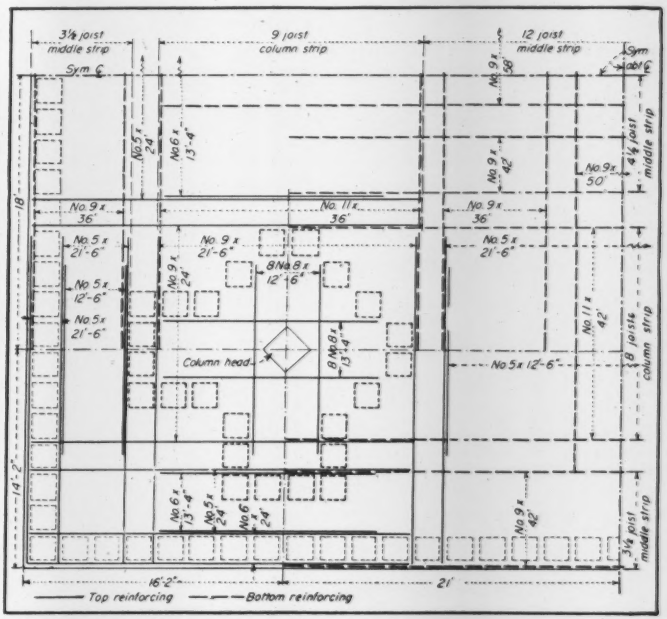


PANS form well-reinforced 74x64-ft two-way ribbed-slab 12 in. deep. Weighing 200 tons, it was raised by lift-slab method to form the roof of a shop in Cleveland, Ohio.

• **Pan details**—Ten inches deep, the pans are 17½ in. square at the top and flare out to a 20-in. square opening at the bottom. A 2-in. flange brings the out-to-out bottom measurement to 24 in. square. They weigh only 8 lb, compared to 20 lb for a similar 14-ga steel pan.

About 1,100 of them formed the roof slab, which is 74 ft 4 in. by 64 ft 4 in. With a 2-in. topping of concrete over the pans and solid 12-in. sections around the columns, the slab weighs 200 tons, or 84 psf. Since pan

REMOVAL of pans is accomplished with aid of air blast. Two workers can "pop out" 150 per hour.



REINFORCING PATTERN—Stirrups weren't necessary because of heavy steel concentration over large area around column heads. There is one reinforcing bar of indicated size and length to each rib between arrowheads, except as noted around columns.

flanges abut, the ribs are 4 in. thick at the bottom and taper out to 6½ in. at the top. The accompanying drawing indicates the slab reinforcing.

Placement of pans and reinforcing bars followed normal removable-pan practice, as did concreting. Conduit was wired to the steel. The lifting operation went off without incident, the 42x36-ft columns spacing proving no problem. Jacks mounted atop the four steel columns were controlled from a central panel. The slab is connected to the columns with steel rings that were welded to the steel-pipe uprights.

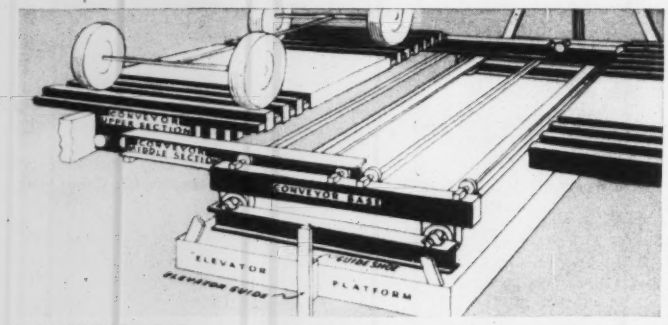
• **Quick removal**—After the slab was up, workers removed the plastic pans by prying a side loose and blowing a blast of air along that side. In this manner, two men "popped out" 150 per hour. The forms were then nested in high stacks that proved to be quite stable.

Close examination of the pans disclosed no evidence of wear or cracking. The developers are confident that 15 or 16 re-uses can be obtained. If so, cost of the new plastic forms would work out to only 10 cents per sq ft—a very satisfactory figure.

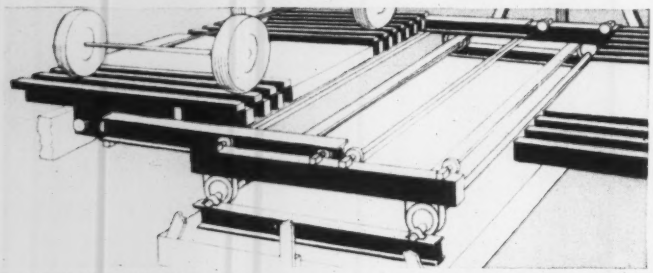
Ohio Lift-Slab plans to either rent or sell the units to other users. (Prestressing, Inc. of San Antonio, Tex., expects to employ the plastic pans for a prestressed concrete ribbed-slab.) If sold outright, price will be in the neighborhood of $6.50 each. Twelve and 14-in. deep pans will also be available.

American Insulator Co., New Freedom, Pa., manufactures the pans. The waffle roof is one of several to be raised for Barth Stamping & Machine Works. McGeorge-Hargett & Associates was the architect.

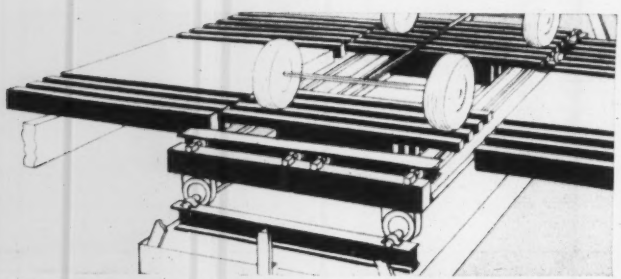
Meshing platforms key to new automatic parking method



1—TO UNPARK CAR, transverse members of conveyor, 4 in. wide on 5-in. centers, mesh between stall beams of same size. Conveyor beams are 3 in. below car wheels.



2—AUTO IS GENTLY RAISED as conveyor platform members rise a total of 6 in., 3 in. above stall beams.



3—OPERATION IS COMPLETED when conveyor section retracts onto the elevator carrying car with it. Cars are parked by reverse procedure.

A NEW TWIST to push-button parking features the use of intermeshing platforms to transfer an automobile sideways from a vertically operating elevator to its parking stall.

Basically, the setup consists of an unusual conveyor mounted in an elevator that serves stalls on each side of the shaft.

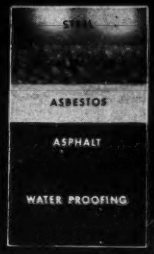
A customer has only to leave his car in a driveway that looks like an ordinary parking stall. From here, everything is automatic. The auto is transferred to the elevator which thereupon shoots up to the appropriate stall and deposits its cargo. The accompanying diagrams detail the unique transfer procedure from driveway to elevator, elevator to stall, or vice versa.

The new method has been named Alkro Integral Parking by its inventors, Mihai Alimanestiano and Cornelius Kroll of Houston, Texas. According to them, more than 220,000 automobiles have been parked and unparked at an average round-trip rate of 50 sec each, in a full-scale test installation. There have been no mishaps and the equipment shows no discernible wear. Daily operation will continue until it does.

A unit, in plan consisting of elevator shaft and stalls on each side, occupies a ground area of 24x25 ft. Floors are spaced 8 ft 6 in. apart and can number up to 50, say the developers. They also claim that their parking units, if built in conjunction with an office building, can cost as little as $1,300 per stall. (A separate 16-story parking building in Washington, D. C. with similar elevator shaft and stall arrangement, described in ENR May 8, p. 59, cost $2,960 per stall.)

Both inventors are graduate engineers, with Mr. Kroll having his own firm, Cornelius Kroll & Co. of Houston. They have been working secretly on the new parking method for several years. Several features are already patented.

WALLS FOR A WIDE RANGE OF SPECIFICATIONS



...AND ALL QUICK!

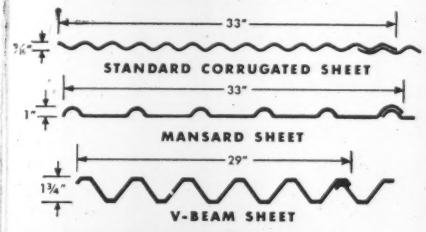
This is

GALBESTOS METAL

A steel sheet to which asbestos felt is metallically bonded. Then the felt is impregnated with asphalt and waterproofed. Tested and approved by Underwriters' Laboratories, Inc., Chicago, and by Associated Factory Mutual Fire Ins. Co., of Boston. Galbestos metal comes in maroon, black or aluminum color and is fabricated in various shapes. It has been architecturally well designed into thousands of installations all over the world.

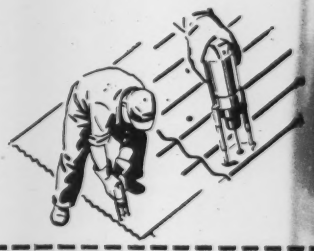
• Galbestos metal for defense plant construction provides a wall resistant to fire, corrosion and blast. It can be well designed, worthy of permanent structures. It is maintenance-free. And, whether you want a mere skin, with or without insulation or panels, the Robertson method enables you to build faster with Galbestos metal than with any other material.

Available in these forms:



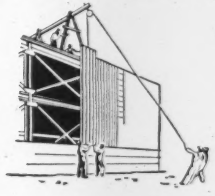
THE TOP-SPEED FASTENING METHOD

permits all fastening work from the outside, eliminates interior scaffolding. This new method permits erection crews to place twice as much material in the same time, with safety. Top-Speed Insulation is a Robertson method for applying insulation from the outside, before the Galbestos is fastened over it. This method also halves the time. It makes a good-looking job inside. Needs no painting.

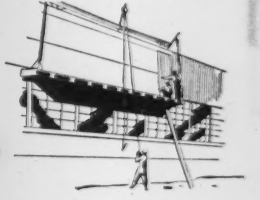


WRITE FOR COMPLETE LINE OF CATALOGS

1. GALBESTOS
2. TOP SPEED FASTENING
3. Q-PANELS (STANDARD)
4. Q-PANELS (G-TYPE)



◀ Q-PANEL (STANDARD) OR Q-PANEL ▶ (G-TYPE)



Q-Panels are the famous Robertson factory-fabricated, insulated curtain wall. They are available in a variety of fluted metal surfaces. Available 2' wide, in lengths up to 25', lightweight, only 3¼" thick, but superior in insulation value to a 12" masonry wall with furred plaster. A small crew can erect a Q-Panel—50 sq. feet—in 9 minutes.

G-type Q-Panels are the field-assembled insulated curtain wall: a flat interior steel sheet with insulation, and a formed Galbestos metal exterior in one of the shapes shown above. This is recommended for attractive, economical industrial jobs where insulation is required.

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World-Wide Building Service

What's U. S. Rubber doing to build the world's largest man-made beach?

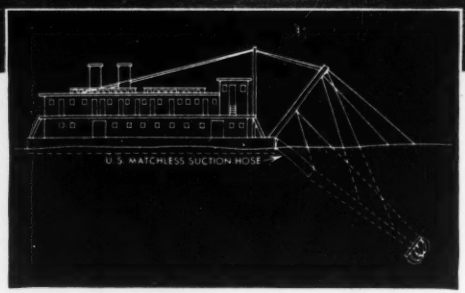

Photo shows dredge pumping sand to make the artificial beach on the Mississippi shore. It extends approximately 1500 feet into the stream. The diagram shows the cutter head which stirs up sand and silt. This in turn is drawn through the pipe, then through the U.S. Matchless Suction Hose to the pump and through the discharge line.

The dredge which has thus far sucked out over 6 million cubic yards of sand to build the 26-mile long beach from Henderson Point, Miss., to Biloxi, Miss., is equipped with U.S. Matchless® Hose. This tremendous job also includes the pumping of an additional 6 million cubic yards of river silt, sand and mud through this same hose. The sloping bathing beach, when finished, will also provide a defense for the sea wall in abnormally high tides. The "U.S." Hose, acting as a flexible connection between the cutter head and the dredge, is still in good condition and has plenty of service life left, despite its rugged treatment. No matter what your hose problem may be, consult United States Rubber Company.

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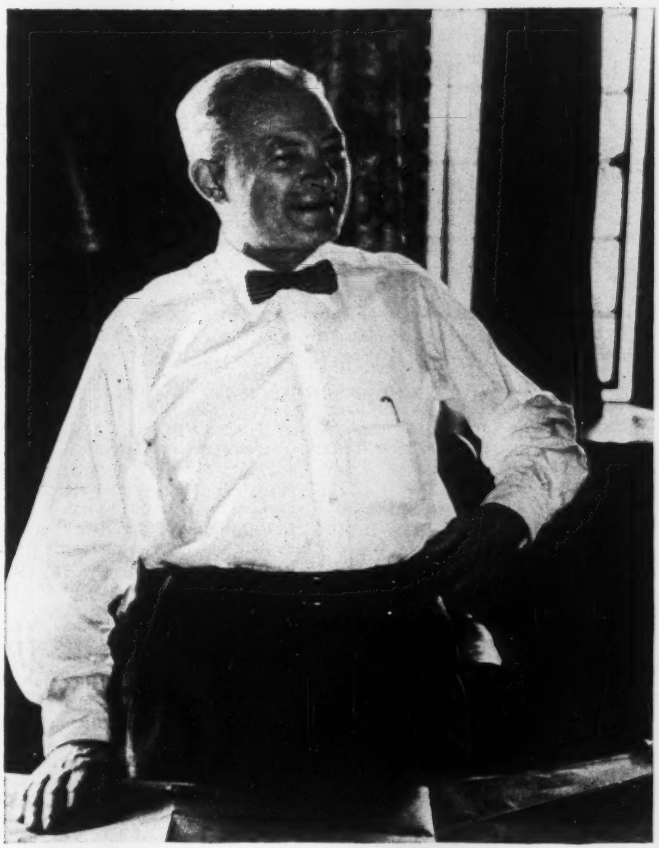

RALPH DE SIMONE, president of Merritt-Chapman & Scott Corp., finds new fields of expansion beckoning. (ENR photos by Compton)

The Black Horse sees new fields to conquer

When the name of Merritt-Chapman & Scott Corp. figures prominently in dedication of such recently completed projects as the Elizabeth River Tunnel, Boston's Mystic Pier No. 1, the Chesapeake Bay Bridge, or New York's unique Pier 57 now under construction—there is nothing unusual about it. Owner of the most powerful fleet of floating construction plants in the country, MC&S has long been a leader in marine and heavy construction.

But lately the familiar Black Horse insignia of MC&S have been bobbing up on an unusual number of industrial and commercial construction projects. In August MC&S officially turned over to the U. S. Army Engineers a $1.7-million bulk storage facility at Charleston, S.C.; and participated in the dedication of the $3.3-million Rockaway, N. Y., sewage treatment works which it constructed. In June the MC&S-constructed Cheney Memorial Building costing $6.5 million was dedicated at the Hudson River State Hospital, Poughkeepsie, N. Y. MC&S also listed completion of $13-million sulphate pulp and paper mill for St. Regis Paper Co. at Pensacola, Fla., three sulphuric acid units for the General Chemical Division of Allied Chemical & Dye Corp. (in East St. Louis; Claymont, Del., and Pulaski, Va.) and soda ash handling facilities at Claymont for the Solvay Process division.

There is nothing new in the fact that MC&S builds these types of structures. The news lies in the increasing number it is building. For MC&S, these projects spell out a new trend, a new phase of expansion in the firm's 92-year development. It is a trend that has been accelerating steadily since the end of World War II.

Analyzing this trend, MC&S President Ralph DeSimone points out to ENR that his firm gives a great deal of thought to projects before it undertakes them.

"We are not building up a backlog for the sake of a backlog. Reputation-wise we can't afford to take work unless we can make a showing on it, unless it is work in which we can excel," he says.

He sees MC&S expansion in industrial projects as natural. The volume of this type of construction has surged under the defense program. The resources and experience built by MC&S as a result of its broadly diversified construction activities enable it to have the men and equipment to move easily and economically to take advantage of this surge. And as relaxation of government controls permits more commercial construction, "Mr. D." as he is called by those in the firm who are close to him, expects to take on more work in that field.

• **New fields to conquer**—When Ralph DeSimone became president of MC&S less than a year ago (Dec. 5, 1951), he reached a peak in his long career with the firm. Civil-engineer trained at New York University, he went to MC&S in 1916, served as engineer, outside superintendent, and by 1925 was in charge of the firm's New England operations. In 1942, he went to New York and took over direction of marine and heavy construction activities. A vice-president by 1945, he was elected executive vice-president and general manager early in 1951 and became a director.

When he took over the presidency he had seen the firm's annual business grow in revenue from a few million to

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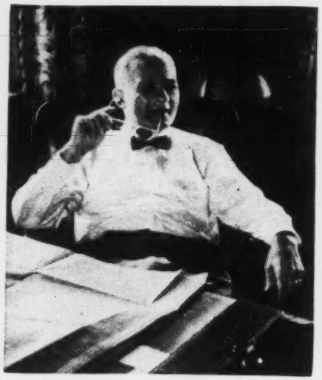


"MAXIMUM coordination between engineer and contractor is vital . . .

"HERE ARE examples of how it can effect construction . . .

nearly $75 million including reimbursable costs under cost-plus contracts—World War II years excepted—this volume marked a new peak in the history of MC&S. This year, revenue is expected to go even higher. At the end of June of this year, MC&S had $95 million in construction work ahead on its books as against $84 million at the close of the first half of 1951. Business was good when "Mr. D." took over his new duties, and since then it has gotten better.

The trend toward more industrial and commercial construction already has made a substantial start. According to the record of projects of over $100,000 for 1945 through 1951, the total contract volume in industrial and building construction for MC&S was $179 million. The total for marine and heavy construction was $136 million.

• **Builds policy**—"Mr. D." is seeking new fields of conquest, but he is using caution and a great deal of planning. He is building his policy with human relations as one of the cornerstones. Out of his engineering background and his construction experience, he is stressing maximum coordination between contractor and engineer.

"On highly specialized jobs, I am of the opinion that 'package' handling of engineering and construction by one organization is most desirable. In our paper mill work, for example, MC&S is in position, if requested, to undertake single responsibility. Our current projects in Valdosta, Ga., for the National Container Corp. and in Israel for the American Israeli Paper Mills, Ltd., are typical," he says.

Projects of this type make up only one part of MC&S ventures, however. To handle the bulk of the work, the firm carries an extensive engineering staff to meet its construction problems, but not to handle in addition the design of major projects.

"Except in the case of highly specialized projects, we believe that the client is best served by use of a contractor-engineer 'team', we think that in such cases it is best for the owner to have his own engineer do the design and work closely with the contractor throughout construction," De Simone says. And "work closely" means more than mere physical proximity.

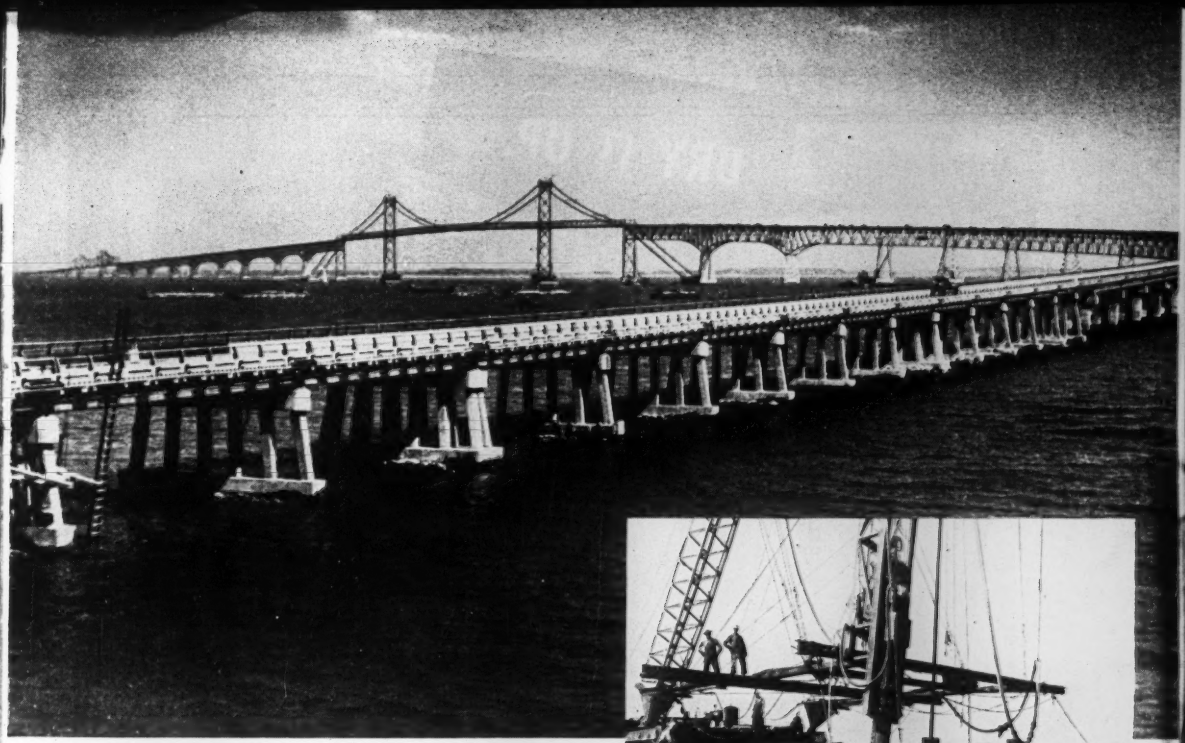
He strongly believes that the question of how to give the client the most construction value for the least money is the all-important goal of both the contractor and the engineer. And to "Mr. D." contractor-engineer coordination is a vital factor in keeping construction costs low and producing a more satisfactory job. He can cite scores of examples.

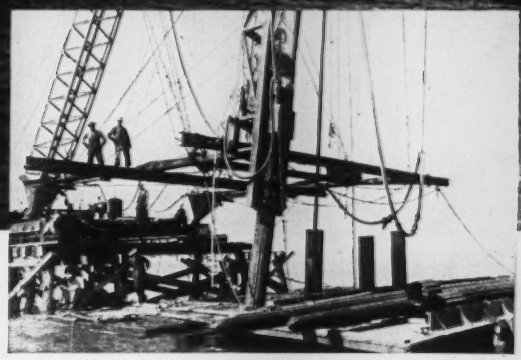
Here are a couple:

"On our current Bay St. Louis Bridge project in Mississippi, plans called for the use of precast concrete piles throughout the 10,198-ft low level structure. After construction started, an unforeseen condition developed which indicated that the driving depth along 1,400 ft of the bridgeline would entail use of reinforced concrete piles to a depth of 155 ft. The engineers for the job, Hazelet & Erdal, recognized that use of precast concrete piles at such great depths would be impracticable. The consulting engineers and MC&S engineers promptly worked out an alternate method involving the use of steel H piles. The result was a better, more satisfactory job all around.

"When the Elizabeth River Tunnel

(*Continued on page 47*)





Built for the Maryland State Roads Commission.
Consulting and Supervising Engineer: J. E. Greiner Company, Baltimore.
General and Pile Driving Contractor (West trestle approach): Booth and Flinn Company, Pittsburgh.

Chesapeake Bay Bridge...

MONOTUBE PILES help carry the load

THE part played by Monotube piles in the construction of this spectacular, $44-million bridge is a matter of pride to Union Metal. The inset photo shows Union Metal Monotube piles being driven for the West trestle approach piers. Monotube piles, used for *all* kinds of construction jobs, large and small, afford a combination of economy and sound construction hard to match. For complete information write to The Union Metal Manufacturing Company, Canton 5, Ohio

Monotube Foundation Piles

UNION METAL

(View of Oceanside Sewer, Long Island, N.Y.)

That's how simple it is to make progress on a wet job!

A MORETRENCH WELLPOINT SYSTEM tailored to your specifications insures dry digging in any kind of soil.

Note the sloped banks in the sewer trench shown above — the absence of sheeting — the use of wellpoints on one side of the trench only, in spite of its width and 16′ depth.

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"WE REALIZE the importance of good labor relations . . .

project was first brought up for consideration, it appeared that its cost would make the project prohibitive. The original engineering report contemplated a 900-ft shield-driven section on the Portsmouth side using compressed air methods. We suggested that, despite its depth, a method could be devised to build it by cut and cover at a considerable saving, which then brought the project within the amount of money available. Our recommendation was accepted by the engineers—Parsons, Brinckerhoff, Hall & Macdonald."

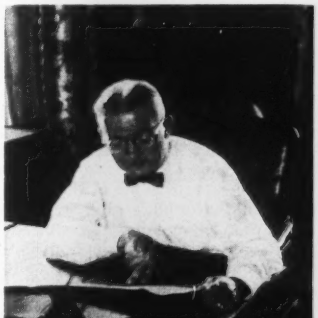
• **How it worked**—Speaking before a joint session of the construction and structural divisions of the American Society of Civil Engineers at the centennial observances in Chicago last month, "Mr. D." recommended:

1. That in preparing his design the engineer constantly keep in mind the methods to be used for economical construction by the contractor.
2. That the engineer be responsible for the accuracy of borings and other sub-surface data shown on the plans.
3. That engineering plans be complete and definitive, and still be kept sufficiently flexible so that they may be adapted without loss of time and, if possible, without increases in costs, when changed conditions are encountered in the field.
4. That the interpretation of plans and specifications in the field be entrusted by the engineer to supervisory personnel who have had practical experience with contractors, and who understand the contractors' methods of obtaining results, and who have binding authority to make decisions.
5. That regularly scheduled field meetings be held between the engineer and contractor representatives to discuss various phases of the work so as to be of mutual assistance when problems arise.
6. That where separate, specialty designs are involved they be thoroughly coordinated in advance, with field conditions in mind.
7. That it be remembered that a design that appears most economical from a purely design standpoint may actually be most costly if it entails the development of special construction methods.

• **People are important**—For "Mr. D." human relations do not stop with contractor-engineer coordination. They embrace labor relations; and include morale of the firm's supervisory personnel.

MC&S is proud of its labor record, and has had a comfortable degree of success at avoiding construction delays due to strikes. "We appreciate the importance of good labor relations," he points out. "We attempt on every job to follow the policy that an ounce of prevention is worth a pound of cure. We try to head off possible causes of friction, and work with our project managers to settle incipient disputes before they reach the work stoppage stage."

It is routine practice for MC&S men to hold pre-job conferences with local unions and reach agreement on



"WE TRY to head off possible causes of friction . . .

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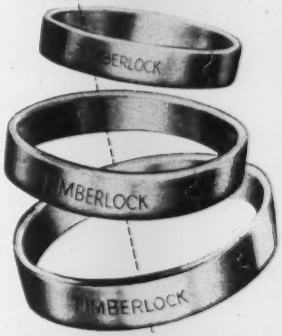

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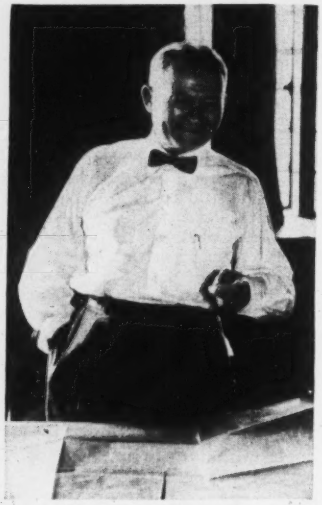


"EVERYBODY likes to ride a winner . . .

which trade is to be assigned work on each phase of a new project. If no agreement is reached on some point, the matter is brought to the attention of the presidents of the international unions involved. When unforeseen jurisdictional questions arise and when no agreement can be reached, the case is turned over to the National Joint Board for the Settlement of Jurisdictional Disputes.

"So much progress has been made by the building trades unions themselves in their efforts to eliminate jurisdictional disputes and strikes, that we have had few work stoppages on this account in the last few years," "Mr. D." reports.

There are many encouraging signs that progressive union leadership is showing an increasing awareness of the fact that the problem of providing the greatest construction values at the lowest possible price is to the interest of everyone in the industry, he says.

As an example: he cites the agreement this year with employers in the New York area, in which labor agrees that its members will:

"Use their best efforts in the industry's and the public's interest to increase production and reduce costs by maintaining maximum man-hour output and use of all machinery, tools, appliances or methods which may be practicable so that the increase in hourly wages herein provided may not result in additional costs to the employers of members of the trade unions."

ENR queried "Mr. D." on whether the Construction Industry Stabilization Commission has helped to stabilize the labor situation. His answer was: "However well intended its efforts, frankly, it is my opinion that the CISC has tended to confuse the labor relations picture. While I know the CISC has done a tremendous job, it faces an overwhelming task in trying to stabilize wages and other employment conditions on a national basis. Any such attempt necessarily puts brakes on free collective bargaining between contractors and labor, and makes for confusion."

• **Morale**—It is described at MC&S as "Merritt fever," it means pride in work, pride in the men and the equipment who do the work. It is a slogan "Mr. D." uses to describe his goal for the firm's supervisory personnel, and one which he, in many ways, personifies.

"Every workman likes to work with good tools, likes to know that his ideas will be listened to, that his work is appreciated and—last but not least—likes to ride with a winner," "Mr. D." says.

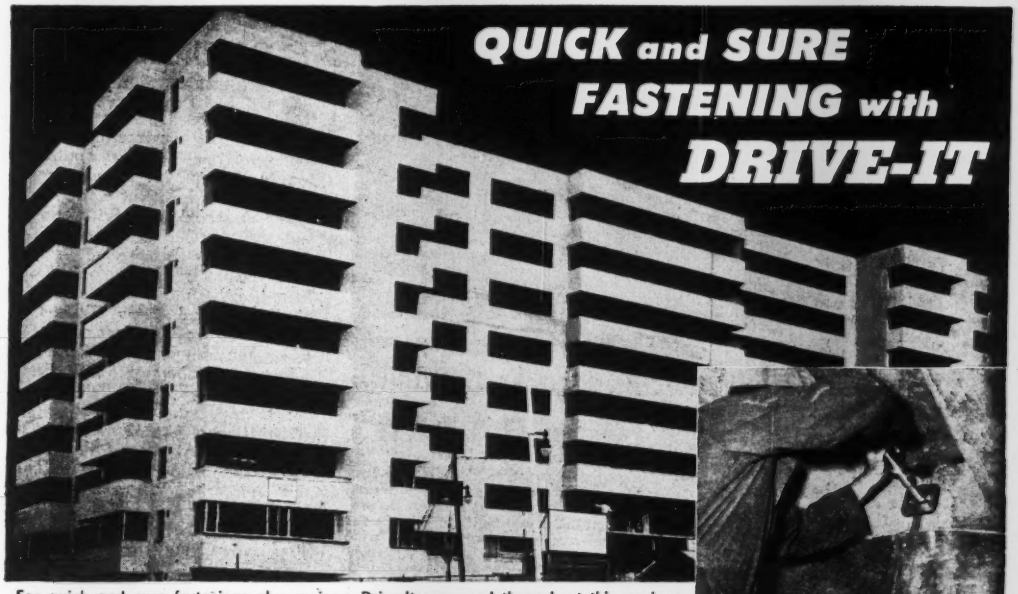
"A survey we made in 1950 showed, for example, that of the 675 men who comprised the core of our working force of approximately 4,000, more than 430 had been with the company five years or more. Of these 141 had served for 20 years or more and 14 were veterans of more than 40 years service. The percentage of veteran personnel is a good indication of our score on human relations."

These figures include the men of the firm's Marine Salvage and Derrick and Inland Salvage departments. Its New York based fleet of heavy hoist derricks is known throughout the U. S. as the "strong men" of the seaboard, and its marine salvage operations have an international reputation.

• **What lies ahead?**—"Mr. D." sees the development and effective use of improved equipment as the biggest current trend in construction methods toward reducing cost and improving quality.

"There is a long list of improved construction techniques—the use of modern excavating machinery and methods, self loaders, the quick steam boiler, and so forth. Another significant trend has been the increasing use of prestressed, and precast concrete units produced on a mass production basis. On our Bay St. Louis Bridge project, for example, the entire deck of reinforced concrete is being precast sectionally ashore, eliminating the usual formwork."

QUICK and SURE FASTENING with DRIVE-IT



For quick and sure fastenings plus savings, Drive-It was used throughout this modern apartment house in Washington, D. C. Fastening ventilating ducts, heating units, and plumbing to concrete and steel—these and many other uses save money, time and effort.

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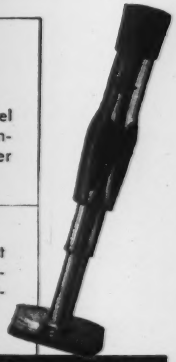
Drive-It uses a small powder load to drive hardened steel pins into concrete or steel. No power lines! No drilling!

UL *DRIVE-IT* is the only powder-actuated tool approved by Underwriters' Laboratory.	 *DRIVE-IT* cannot be discharged accidentally due to the push and turn sequence. This, plus the large safety pad makes *DRIVE-IT* triple safe.	 Exclusive Automatic Barrel Extension for fastenings inside junction boxes or other recesses.
 DRIVE-IT is the only powder-actuated tool which requires but one standard power load regardless of penetration desired.	 Exclusive Swivel Safety Pad easily rotated for getting into close quarter work.	Drive-It "300", lowest cost fastening tool. Low original cost and low operating cost.



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Picture shows a 10 cu. yd. Sauerman Scraper grading a bank of the Mississippi River to provide the desired slope for a concrete revetment. Head end of scraper machine is mounted on a barge and the tail end is attached to a low tower mounted on crawlers. Scraper bucket is suspended from a carrier riding on a cable so that it can be lifted after pulling its load into deep water.

Photo, War Dept., Memphis District, Corps of Engineers.

. . . and cut your handling costs by using

SAUERMAN SCRAPERS

In far northern Alberta, Canada, valuable tar sands are excavated from a river bluff by a 1 cu. yd. Sauerman Scraper.

Here is a Sauerman machine operating a 3 cu. yd. Crescent scoop on a 700-ft haul in a deep gravel pit. It digs and hauls 120 tons an hour to keep a big plant humming.

Digging power, haulage speed, and long reach—plus simplicity of operation—are combined in a Sauerman Drag Scraper. It provides a "one man, one machine" system for efficient and economical handling of a wide variety of earth moving jobs.

A Sauerman Drag Scraper can be used to excavate hard packed gravel, move wet sand, coarse aggregate or sticky clay, haul and stockpile bulk materials, remove sludge from settling basins, etc. Its versatile working range adapts it to extremely compact operations as well as those extending over large areas. The unique, bottomless bucket is controlled from a safely located operating station, thus eliminating the need for sending men or equipment into dangerous locations.

Initial investment is moderate and maintenance costs are exceptionally low, since only the most expendable parts of the Sauerman Scraper contact the material in which it is working. Diesel, gasoline, or electric power consumption is small compared to the tonnages handled.

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OBITUARIES

Richard V. Hyland, 57, a founder of the consulting engineering firm of Madigan-Hyland, died at Southampton, N. Y., Sept. 20. He was a graduate of the University of Notre Dame, 1918. He served in the first world war and then became a bridge engineer with the New Jersey State Highway Department. In 1929 he joined with M. J. Madigan to form the firm of Madigan-Hyland, New York City. Among the big New York projects on which the firm has been consultants were the Triborough and Bronx-Whitestone bridges, the Belt Parkway, the Henry Hudson Parkway and the reclamation of the Worlds Fair site in Flushing. At present the firm is consultant for the N. Y. State Thruway Authority and as construction engineer of the Tappan Zee bridge to connect the Westchester County and Rockland County sections of the Thruway across the Hudson River at its widest point.

Prof. John K. Tuthill, 67, railway engineer and research scientist at the University of Illinois, died Sept. 15 in Urbana, Ill. He received his engineering degree from the university in 1914 and, after serving with the Illinois Traction System as a division superintendent, he became part owner of a Michigan power company. He returned to the university in 1920 to teach and engage in research, which included railbonding and welded joints. He also conducted research in noise abatement. He acted as consultant to the Illinois Central, Rock Island, Illinois Traction System, Chicago Surface Lines and the American Bureau of Welding.

H. D. Hilborn, chief structural engineer for the Emsco Derrick & Equipment Co., died at Houston, Tex., Aug. 2. He got his professional training in Allegheny College and Cornell University, and had spent 42 years in engineering work. He formerly lived in Miami, Fla., where he helped design many of that city's office buildings and hotels. He was a pioneer in the use of concrete in building construction. For about six years he was bridge engineer for the Burlington R.R. He was a contributor to engineering journals, and lately was a member of a committee on standardization of derricks and masts.

Harry Radcliffe, 50, road commissioner of West Virginia, died at Charleston, W. Va., Sept., 19. He had been with the road commission for

30 years and was promoted steadily.

Henry G. White, 80, civil engineer, died Aug. 15 in Rochester, N. Y. He was with several railroads during his career. He also worked on the conversion of the old Erie Canal into part of the N. Y. Barge Canal System; the Isthmian Canal in Nicaragua; the subway in Rochester; and various state highway projects. A graduate of Cornell University, he was assistant engineer in the New York State Engineer's Department from 1894 to 1907; and division engineer of the New York, Ontario & Western Railroad from 1899 to 1903. For the next two years he was resident engineer for the former Rochester, Syracuse and Eastern Electric Railroad. In 1910 he was named vice president of the I. M. Ludington's Sons Construction Co., Inc. of Rochester.

George Simmons, 82, civil engineer, died Sept. 13 in Springfield, Ill. He was an employee of the Sangamon County Highway department and formerly had worked with the Illinois Department of Highways and for the Illinois Central R.R. in Springfield.

Harvey Whipple, who for 32 years was secretary and secretary-treasurer of the American Concrete Institute, died Sept. 6 at Northville, Mich. He was the author of "Concrete Stone Manufacture," published first in 1915.

John C. Lindsay, 68, former civil engineer for the Gulf Oil Co., died in Beverly Hills, Calif., Sept. 3. He was a graduate of the University of California at Berkeley.

Robert H. Matthews, 76, a civil engineer identified with major tunnel construction jobs in the Northeast, died at Warren, R. I., Sept. 12. He designed and supervised projects at Providence, R. I., Washington, D. C., and in Connecticut.

Albert Haworth, 60, engineer and contractor of Tampa, Fla., died there Aug. 30. During the last 35 years he had built many millions of dollars worth of buildings in Central Florida.

Commander W. T. Powers, U.S.N.R., a former general contractor in Cambridge, Mass., and Concord, N. H., and a member of the civil engineer corps of the Navy, died at San Diego Calif., Sept. 7. He served with the U. S. Army in World War I and with the Navy Seabees in World War II.

Tough jobs—tough schedules—that's the picture cut out for portable air compressors. No time to stop and fuss with adjustments here . . . too many operations depend on the compressor running steadily. That's why most manufacturers of portable air compressors specify Twin Disc Model SLT Spring Loaded Clutches. Developed by Twin Disc engineers working closely with leading compressor designers, Model SLT Clutches are built with a wide margin of safety—constructed for positive drive, free from burning and slippage. As a result, operators refer to these Twin Disc units as "the clutch you can install and *forget* about."

Twin Disc Spring Loaded Clutches *are* dependable and rugged—but there's another important factor. *Sixty* Twin Disc Parts Stations—*eight* Factory Branches—and a $3¼ million circulating parts and complete unit inventory add up to the fact that *you* can install a Twin Disc Drive and forget it—but *Twin Disc does not.*

A Twin Disc Model SLT Spring Loaded Clutch—designed for extra-heavy duty—provides the power link in this Le Roi 315D Airmaster compressor with wagon drill, at work in a quarry near Waukesha, Wisconsin. Engine is an International UD-18 Diesel.

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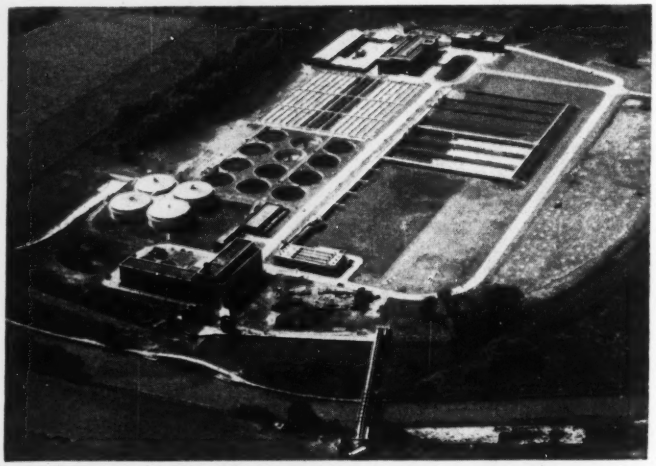


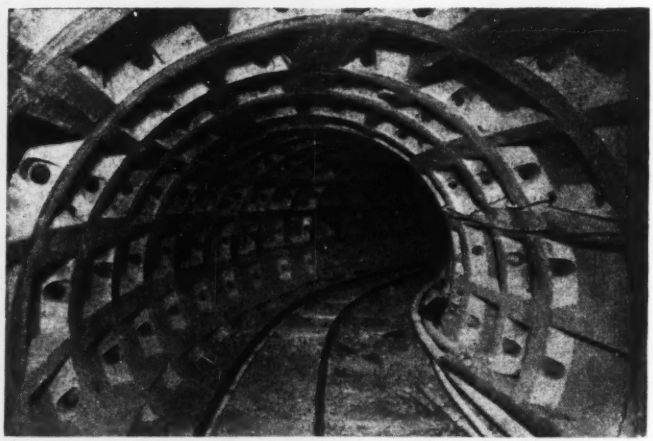
MAPLE LODGE WORKS—England's big new sewage treatment plant is part of a trunk sewer system northwest of London.

Plant dedication marks completion of significant English sewerage system

The Colne Valley Scheme—hailed as England's foremost sewerage construction project completed since World War II—was opened officially recently with fitting fanfare.

Unifying treatment of sewage in the Colne River Valley and rendering obsolete 26 outgrown works, this $17.5-million project drains an area of 150 sq mi with some 55 miles of trunk sewers. A third of a million persons are now to be served by the war-delayed facilities.

• **Latest in treatment**—Maple Lodge Works, the scheme's treatment plant, occupies 26 acres—compared with 500 acres covered in aggregate by the local plants it replaces. Complete treatment (activated sludge) is rendered



CONCRETE TUNNEL LINER was used when postwar cast iron prices went out of reach. Guniting completes the finished sewer section.

since the plant is within a water supply catchment area; storm water is treated as well as sanitary sewage.

The plant's four 22-mgd grit channels and its comminutors have automatic control regulated by sewage level in a measuring flume. Sedimentation tanks afford a 7½-hour detention in dry weather flow; additional tanks are reserved for storage of storm water.

Eight 750,000-gal aeration tanks give dry weather flow a 12-hour aeration period in the activated sludge process. Sludge is digested; gas is collected and used as fuel.

Sludge dewatering and drying methods are an outstanding feature of the plant and are called the "most complete outside the United States." Sludge is conditioned with a mixture of ferric chloride and ferric sulphate before vacuum filtration, flash drying and incineration.

Six vacuum filters, each of 300-sq ft area, take out some 90% of the water before sludge is belt-conveyed to the flash drier. There it is mixed with dried sludge and flash dried at 1,100 F. Powdered coal is burned in the drier. Sludge will be burned or disposed of as fertilizer, depending upon the market for it.

• **Sewers in tunnels**—Of the 55-mile length of trunk sewers (15 to 75-in. dia) some 6 miles had to be tunneled. And an interesting feature of the soft-ground tunneling method was this: Postwar cast-iron tunnel-liner prices were so high that concrete liner segments were precast for the job. This concrete lining was bolted in place as shown in the accompanying photograph.

Such segments had been used previously in dry London clay, for some 3½ miles of London Tube but they had not been tried in wet ground before. A test length proved the device would work, and a considerable capital cost saving was realized through its use. The lining was simply covered with sprayed-on concrete screeded to a smooth finish at design diameter. (This particular type of bolted-together precast concrete segments to form liner rings have never been used in the U. S., although other patented concrete blocks have been.)

Relatively short lengths of tunnel finished before the war are cast iron liner plate left in place and built up inside with gunite.

Sandford Fawcett and Partners, London, were consulting engineers on the Colne Valley project.

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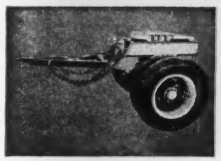

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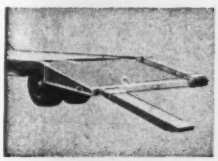
Increases braking power . . . relieves tension on tractor brakes while holding loads on inclines, or for level parking. Ideal for locking trailer while hooking tractor. Located on left side of gooseneck.



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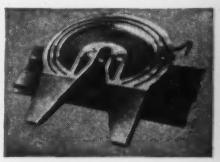
Increases platform area . . . lowers rear loading point, thus making load easier, safer without use of conventional skids. Short pair of hinged skids (shown) available at slight additional cost.



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Choice of Holland or Austin designs with capacities from 24,000 to 60,000 lbs. for handling gross king pin loads both on and off highway. Semi-automatic, full floating types with rubber mounting.

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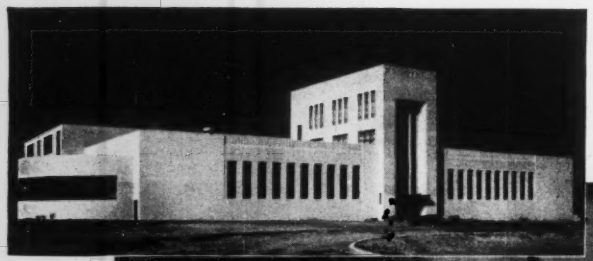
on school construction



Frostburg High School
Frostburg, Md.
Architect: R. H. Hitchins
Contractor: J. J. Bendik

Whittier Union High School, Whittier, Calif. Architect: W. H. Harrison. Struct. Engineer: P. E. Jeffers. Contractor: J. K. Thomas.

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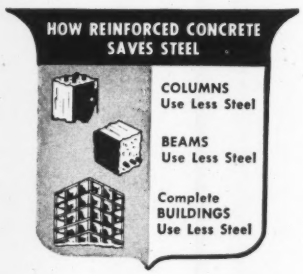

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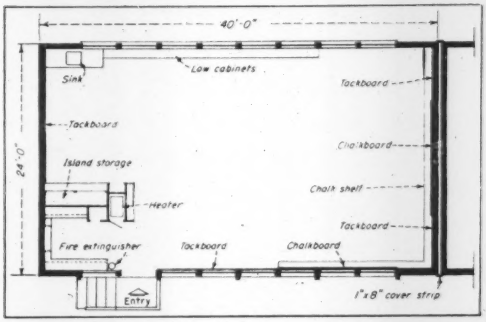
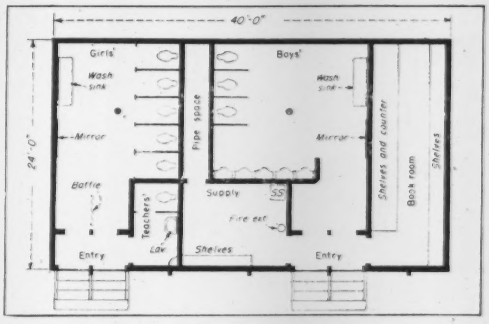


Standard classroom units plus . . .



standard toilet unit make a . . .

Money saving portable school building

Faced with the problem of providing school facilities in a city whose total—and student—population is rising by leaps and bounds, the Board of Education at San Diego, Calif., five years ago started building what it calls portable classrooms.

This year some of the portables had a chance to live up to their name. There are now more than 300 portable classrooms in use in San Diego and expansion needs dictated moving about 50 of them to new sites. Contractors have now completed moving the last of the 50.

The problem was brought on by figures like these: In 1940 the city's school population totaled 31,900. For the school term just starting, the total registration is 59,000—close to double.

The San Diego Unified School District looked with apprehension at what happened in many Eastern cities:

Big school buildings were constructed in new residential areas. Then, when the "wave" of school-age children went by, the buildings were half unused. It decided that the initial population impact in new areas is greater than the area's steady, long-term school population.

Another thing, home builders have been throwing up new subdivisions with such speed that conventional school buildings simply could not be built fast enough to meet the need.

• **Solution**—The solution was the portable classroom, the brainchild of Clyde Hufbauer, then architect for city schools and now a practicing commercial architect; and of Ralph C. Dailard, associate superintendent of schools in charge of buildings.

The portable classrooms on which the school board first accepted bids Aug. 19, 1947, were regulation 24x 40-ft units built of top quality materials. Dailard and Hufbauer bristle at any hint that their "temporaries" are in any way sub-standard. Teachers and students agree that they are attractive, well-equipped and comfortable rooms.

The frame buildings are designed with heavy timbers under the flooring. These rest on concrete piers, and the whole unit may be rolled away to a new site without dismantling and with use of only standard house-moving equipment. They are built on-site.

The portable nature of the classrooms answers the Board of Education's worry about half-used school buildings. Its practice has been, if the need is immediate, to install all portable units on a new site. The design has been adapted for toilet room units and administration units so that a complete school can be assembled. The immediate need having been met, design work could be started on a minimum number of permanent classrooms, toilet, heating and administration facilities. When these were built some of the portables could be moved to new sites. Then in future years if the school population in the area dropped, more portables could be moved away to new sites as needed.

Inside, the classrooms are modern. Teachers have expressed satisfaction with the lighting. Windows are high on one side, and a wide overhang shades glare, avoiding direct light, and providing a maximum of good light without casting direct rays into the eyes of the pupils. The wide overhang

WELL-LIGHTED, attractive interior of a portable classroom in San Diego, Calif.

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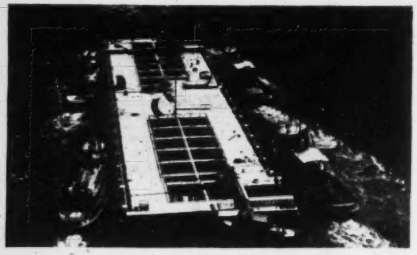
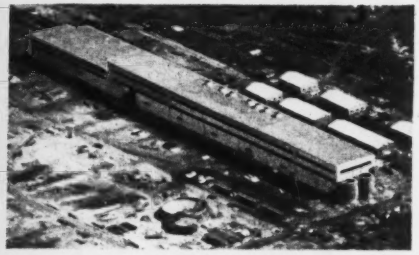
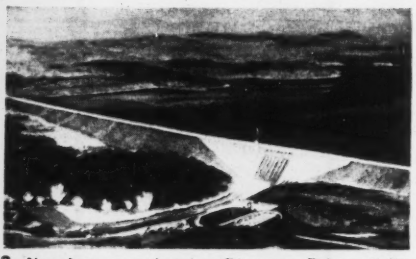


1 *One of three "boxes" for New York City's new "pontoon-type" Pier 57, North River.*



2 *300-ton per day sulphate pulp and paper mill at Jacksonville, Florida, for St. Regis Paper Co.*



3 *New dam across American River near Folsom, Calif.*

4 *960-bed hospital at Poughkeepsie, New York.*

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also functions as an outdoor hallway when the units are assembled in a row.

Dailard is convinced the plan is adaptable to any area with a mild winter climate, and that with a minimum of design change the plan could be used in cold climates.

• Low cost—Another benefit for the San Diego school system, which has had to watch its funds while financing a huge school building program: The units were not designed to save money. But largely because of the standardized nature of the projects, the cost of portables has proved to be less than comparable in-place buildings on a per sq ft of classroom basis.

The average sq ft cost for portable classrooms, toilet, administration and kindergarten rooms on the first 289 units built was $7.87. They have been built in bid units ranging from three ($7.10 per sq ft, June 10, 1950), up to 44 units ($8.82 per sq ft, July 3, 1951). The highest sq ft cost has been $8.82, and the lowest $6.03 on June 7, 1949, a bid group of 30 units. The most recent contract, let July 22, 1952, on 12 units, figured out at $8.41 per sq ft. In comparison the most recent in-place construction bid for two kindergarten rooms at Hamilton School figured $12.25 per sq ft. Hufbauer figures that the average cost of regular in-place classrooms in San Diego ranges from $12 to $13 per sq ft.

Dailard credits the portable program for San Diego's record of having practically no double school sessions. In 1951-52 eight rooms were on double sessions for approximately three months.

Pennsylvania to spend $2 million for renovation

The Commonwealth of Pennsylvania is spending some $2 million, mostly for new utility lines, in renovating and improving its $10-million (1900 price) state capitol building in Harrisburg.

The big utility renovation includes a new water distribution system, a new electrical system, new steam lines and new sewers.

Other smaller jobs include marble restoration work in the interior of the nearly 300-ft-high dome and the waterproofing of building plots.

The plazas, built to fit in with the architecture of the capitol group, have been a headache ever since they were built. They act as roofs for state offices below and have presented a constant leakage problem.

$5-MILLION maintenance and overhaul building as it will look when completed. The nose-in feature is visible in the original M&O building. (Florida Photo)

Airport building has nose-in dock

Eastern Air Lines' $5-million overhaul and maintenance building under construction at Miami International Airport had to be engineered for hurricanes, hurricane-borne rainfall, and airplanes of the future.

Moreover, it had to be engineered to provide nose-in aircraft maintenance docks instead of the usual clear-span enclosed hangars which have been standard since the days of the Wright brothers.

Described by Eastern officials as the biggest of its kind in the world, the building provides 14 nose-in docks, each with an unobstructed width of 100 ft and vertical clearance of 30 ft.

Only the forward portion of the aircraft, the part containing the pilot's compartment and the forward half of the wings containing the engines, is under cover when a plane is in one of the docks. The cabin and tail stand in the open air.

Another part of the building forms a conventional hangar in which planes are completely enclosed while undergoing major overhaul.

• **New design**—As airplanes got bigger and heavier, Eastern engineering people from mechanics on the line to President Eddie Rickenbacker wrestled with the problem of getting them serviced, maintained and overhauled, speedily and efficiently, while scattered over the vast areas of ground space their size required.

Five years ago, the combined thinking of Eastern's engineering personnel resulted in a design for a "T"-shaped building with nose-in docks for maintenance, an enclosed portion for major overhaul, and outdoor stations for ground service such as washing, cleaning, gassing, oiling and tire inflation.

In 1948, Eastern completed such a building at International Airport at a cost of $1 million. In addition to meeting the need for compressing ground service activities into a relatively compact area, it was an experiment in taking advantage of Miami's year-round outdoor weather.

The new building is three times as big and will cost five times as much as the pilot building.

Design for the project was no routine job for the engineers. Eastern specified design criteria to meet these special conditions:

• Hurricanes, which sometimes batter the Florida peninsula with winds of 150 mph sustained velocity exerting pressures of 112 psf, according to old rule-of-thumb formulas.

• Average annual rainfall of 59.18 in., 100 in. in hurricane years and as much as 3.4 in. in one hour during hurricanes.

• Flexibility to handle bigger and heavier airplanes of the future.

• **Buildings**—L. B. Taylor, Miami con-

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sulting structural engineer who designed the pilot building, designed the new one. Earle M. Rader, Miami consulting engineer, designed the ramp paving and drainage system.

The building is in the form of a "T" with an overall length of 1,218 ft. The stem of the "T" is the maintenance portion and contains the 14 docks.

The bar of the "T" is the major overhaul hangar. It is 335 ft long and 150 ft wide. It has vertical clearance of 38 ft under clear structural steel spans of 150 ft and doors mounted on railroad rails at each end.

This part of the building will accommodate two of Eastern's Super Constellations at one time for major overhaul.

The enclosed portion of the building contains 329,749 sq ft of floor space. Cantilevered canopies over the maintenance docks cover another 119,000 sq ft, making a total floor area of 448,749 sq ft.

The paved ramp, or apron, which completely surrounds the building, covers approximately 32 acres.

A one-story, lean-to warehouse 60 ft wide runs the length of the bar section on the east. It provides ready access from LeJeune Road, eastern boundary of the airport, without crossing lanes to the docks and hangar.

Two smaller lean-to buildings, each 26 ft wide and 108 ft long, adjoin the bar section on the west, separated by the stem. These are the engine change shops.

The airlines' experience with the pilot building, plus the need for flexibility, dictated a steel frame structure in the new building.

Design of the maintenance dock portion is sectional. This is so that if airplanes get bigger, the docks can be deepened to accommodate them without major structural changes.

• Doors—Taylor conceived one feature which, as far as he and Eastern officials know, is new in airplane maintenance building design. He divided the stem into four fire zones and designed special fire walls at three of the expansion joints.

His sliding doors for the hangar can be locked in a proper ventilating position during a hurricane. This will forestall a build-up of pressure inside. Three 1,000-ft-long hangars at the Richmond Naval Air Station near Miami were blown apart during the 1945 hurricane when pressure built up inside because of improper ventilation.

Taylor also provided special steel plates which can be bolted to the

bottoms of the doors, clamping them rigidly to their rails, when the weather bureau hoists hurricane warnings. This will prevent unshipping under hurricane wind pressure.

• **Materials**—Center section of the stem has three floors. Supported floors are designed for 200 lb live load. Heavy shop equipment and stockrooms are on the first floor, offices and accessory shops on the second and bulky parts and supplies on the third.

Roof decks over the cantilever overhangs and siding throughout the structure will be H. H. Robertson's "Galbestos" steel units welded or strapped to the purlins or girts. The material weighs less than 3 psf and is rated almost indestructible by fire.

Roof decks over the main portion of the building are of corrugated steel welded to the purlins.

Conventional cellular steel floor deck, welded to the beams, will be used throughout the building. The first floor is concrete, the second and third pecan and hickory flooring over the steel deck.

The built-up, 20-yr bonded roof over the main section will cover an area of six acres. The roofing will be applied on 1-in. insulation board.

• **Ramps and drains**—In designing the ramp area and a drainage system for it, Rader's job was complicated by several factors.

Eastern's biggest aircraft now is the Super Constellation, whose maximum gross load is 120,000 lb. But Rickenbacker foresees airliners of 200,000 lb gross load.

Moreover, some engineers believe that static loads created by heavy aircraft undergoing overhaul or maintenance is more damaging to floors and ramp paving than the shock loads of landings and takeoffs.

On the drainage side, the problem was taking care of normal rainfall, which averages 59.18" a year, and as much as 100 in. in hurricane years, on a site only 6.8 ft above sea level and with no natural drainage.

The maximum 5-yr storm at Miami has brought 3.4 in. of rainfall at the airport in one hour, flooding hangars and other buildings.

The drainage system Rader designed consists of 5,795 ft of concrete pipe storm sewer ranging from 18 in. to 48 in., with manholes, inlets and special structures required for functioning of the system, and pipe encasement or protective slabs.

In the section under the building, the storm sewer lines are laid in a concrete cradle between continuous walls of sheet steel piling for protection of the building foundation.

The system will have three outlets into a 4,000-ft open drainage ditch which will empty into Tamiami Canal bordering the airport. A stilling basin is provided at the outlets for collection of sand and silt. It will be cleaned by drag-line.

Test borings in the ramp building and ramp area showed the presence of cavities and voids beneath the surface which could result in possible paving failures.

To spot these weaknesses, the whole area was test rolled with a pneumatic-tired roller having a wheel load of 50,000 lb.

• **Paving**—To obtain the desired minimum K factor of 500, the subgrade was stabilized with limerock to a depth of 12" below the bottom of the paving. The subgrade was compacted in two 6" layers, each having a minimum of 100% maximum density at optimum moisture as determined by the A.A.S.H.O. Method T-99.

Ramp paving is Portland cement concrete with a flexural strength of 700 psi after 28 days, and a safety factor of 1.6 for the working flexural strength of the concrete.

To attain the 700-lb flexural strength, the concrete required a mix containing not less than 6.5 bags of cement per cu yd and not more than 5.5 gal of water per bag of cement.

Paving was poured in slabs 12 ft 6 in. wide. Tie bars prevent separation of exterior slabs around the apron.

Load transfer is provided across expansion joints by dowels and between adjacent slabs by keyed joints.

Eastern is having 3,260 lineal ft of propellor blast deflector boards constructed around the north, east and south sides of the concrete ramp.

Twenty-two positions at which Super Constellations can be serviced will be constructed along these blast deflectors. Each position will have electric, water, Varsol, public address and compressed air facilities.

Eastern figures the building cost at $4 million and the paving and drainage at $1 million.

There is no general contract for the job. Construction is being executed under the supervision of Joseph J. H. Brock, an Eastern vice president at Miami, and J. H. Shartle, Eastern's resident engineer.

Twenty-nine separate contracts were awarded for materials, equipment and construction.

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MEETINGS

Gail A. Hathaway to head international dam body

Gail A. Hathaway, special assistant to the Chief of Engineers, was elected president of the International Commission on Large Dams at a meeting of the executive committee held during the Centennial of Engineering in Chicago. He succeeds Andre Coyne of France who has served a six-year term during which congresses were held in Stockholm, Sweden, and New Delhi, India.

Other new officers of the International Commission include G. Drouhin, director of irrigation and drainage in Algeria, who will be vice-president, and Claude Chauvez, engineer in the thermal electricity division of the French Ministry of Industry, who will be secretary-general, succeeding Raymond Giguet, director of equipment of Electricite de France.

Mr. Hathaway, who was also elected a vice-president of the World Power Conference, has been chairman of the U. S. Committee of the International Congress on Large Dams for the last several years. He is now succeeded in that post by Carl P. Vetter of the U. S. Bureau of Reclamation.

The U. S. committee, which now is made up of about 35 members, will be enlarged if plans now under discussion are carried out. Membership would still be confined to a relatively small number of highly qualified engineers and other specialists and organizations with exceptional accomplishments in the field of large dam design and construction, but even a small expansion would improve the committee's financial setup. The objective is to make the committee independent of outside contributions upon which it has heretofore relied. Annual dues would be $10 for individuals and $100 for organizations. Information about membership may be obtained from L. M. McClellan, chief engineer, Bureau of Reclamation, Denver, or from Mr. Vetter, Bureau of Reclamation, Boulder City, Nev.

No other changes in the U. S. committee setup are planned, its affairs continuing to be administered by an executive committee. Present members of this committee, in addition to Vetter and Hathaway, are: Samuel B. Morris, general manager and chief engineer, Los Angeles Department of Water and Power; Ford Kurtz, vice-president, J. G. White Engineering Corp.; Leslie N. McClellan, chief engineer, U. S. Bureau of Reclamation; Clarence E. Blee, chief engineer, Ten-

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MEETINGS

nessee Valley Authority; Francis S. Friel, consulting engineer, Philadelphia; and Michael Straus, commissioner, U. S. Bureau of Reclamation.

The international officers and directors decided that papers for the Paris, 1955 congress will be accepted on: (1) Design and construction of dams on permeable soils, including methods of foundation treatment; (2) settlement of dams due to compressibility of the dam material or of the foundation; (3) economy and safety of different types of concrete dams; and (4) the relation of cement content of concrete for dams to performance in service.

Form irrigation body

A meeting in Chicago, Sept. 9, of the year-old International Commission on Irrigation and Drainage was followed by the organization of a U. S. national committee to work with it, in the same manner that the U. S. Committee on Large Dams works with its international commission. The U. S. committee, sponsored by the Irrigation and Drainage Division of the American Society of Civil Engineers, includes individuals associated with industry, irrigation construction, several governmental agencies and organizations concerned with the operation of irrigation and drainage systems. On its executive committee are W. E. Blomgren, assistant chief engineer, U. S. Bureau of Reclamation as chairman, and G. T. McCarty, New York City; A. P. Rollins, Austin, Tex.; Ivan D. Wood, Denver, Colo.; S. D. Gross, Middletown, Ohio; Harold A. Scott, Jacksonville, Fla.; and Harold Conkling, Los Angeles, Calif.

Seventeen countries were represented at the meeting. Sir William Halcrow of England presided in the absence of the international president, A. N. Koshla of India. Secretary-General N. D. Gulhati of Delhi, India, was responsible for the program which was largely devoted to consideration of reports, administrative matters and an agenda for the next international meeting in Algiers.

CALENDAR

National Planning Conference, American Society of Planning Officials, Sheraton Plaza Hotel, Boston, Mass., Oct. 5-9.

Federation of Sewage and Industrial Wastes Associations, Hotel Statler, New York City, Oct. 6-9.

Structural Engineers Association of California, Mission Inn, Riverside, Calif., Oct. 16-18.

President's Highway Safety Conference, Chicago, Oct. 17-18.

California section, American Water Works Association, Huntington Hotel, Pasadena, Calif., Oct. 27-31.

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Relocating a railroad at Tomar, Washington called for dragline work for a second 4500; then came a quick switch to shovel for the next job and a fast move to Kemmerer, Wyoming.

Not only are these large excavators "quick change" artists, but they can be shifted from location to location almost as fast as the ordinary small shovel. Ships on standard flat cars or trailers — erection time 3-5 days.

A Manitowoc 4500 will cut your costs too, give you small machine mobility and versatility plus big, low cost capacity. Get complete details. Manitowoc Engineering Works, Manitowoc, Wisconsin.

then it's a **SHOVEL** with a 5 yd. dipper and 50' boom transported to Kemmerer, Wyoming.

now it's a **CRANE** along with another Model 4500, erecting steel, turbines and pouring concrete.

MANITOWOC

SHOVELS 1-5 YD. — Speed Crane — CRANES 18-100 TON

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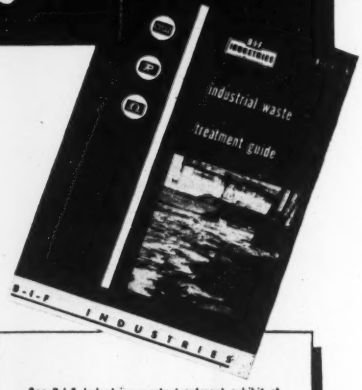

See B-I-F Industries waste treatment exhibit at the Federation of Sewage and Industrial Wastes Association Convention — Hotel Statler, New York City, October 6 to 9, 1952. Booths 31-32. Get your copy of the NEW Industrial Waste Treatment Guide at the Convention — or write to B-I-F Industries, 390 Harris Ave., Providence 1, Rhode Island.

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BUILDERS OMEGA %PROPS%

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.
ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

Mass., Bedford—B.A. 10/9—Town, Sewage Comn., Town Hall, 14 in. force main, gravity sewers. Bids 9/4 rejected. CD 9/9 under LB.

▲† Mass., Bedford—UTILITIES—B.A. 10/10—U. S. Eng., 857 Commonwealth Ave., Boston, roads, grading, site utilities, Bedford Research Center, Eng. 19-016-53-25. $3,000,000. Plans deposit $50, refundable. CD 8/22.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† Verrier Constr. Co., 65 Commercial St., Portland, Me. LB. $5,210,300. est. $3,520,000. aviation gasoline and jet fuel bulk storage, tank farm, Spec. 31260, HARPSWELL NECK, ME. First Naval Dist., 495 Summer St., Boston, Mass. Bids Sept. 17. CD 9/9.

BUILDINGS

LOW BIDS AND CONTRACTS

D. A. Sullivan & Sons, Inc., 82 North St., Northampton, Mass. CA. est. $700,000. DORMITORIES No. 10 and 11, AMHERST, MASS. State, University of Mass., Amherst, Mass. CD 4/17.

▲ Bedford Gardens Co., c/o Lester N. Lechter, designer, 8 Mana Ave., Sharon, Mass. Separate Contracts. $1,250,000. seventy-eight 1 story ranch HOUSING, BEDFORD, MASS.

Swenson-Janson Co., 82 Foster St., Worcester, Mass. CA. Est. $500,000. SERVICE CENTER addn., renovations, WORCESTER, MASS. Worcester County Electric Co., 11 Foster St., Worcester, Mass.

DeLuca Constr. Co., 27 Crescent St., Glenbrook, Conn. LB. $793,000. Willard-Belltown Elementary SCHOOL, Pepper Ridge Rd., STAMFORD, CONN. City, Bd. Educ., Stamford, Conn. Bids Sept. 16. CD 9/4.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

N. J., Port Newark—FOUNDATIONS—B.A. 10/7—At office Chief Engineer, of the Port of New York Auth., 111 8th Ave., New York 11, N. Y., const. foundations for Bldg. No. 141 at Port Newark. Cont. PN 200.022. Plans deposit $25. CD 6/19/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ NEW YORK—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,

D. & T. Franzese Bros., 114 N. Madison Ave., Watkins Glen, N. Y. LB. $65,310. est. $81,000. 4.66 mi. Canisteo-Whitesville, Pts. 6 and 7, State Hy. 8265-8265A, RC. 52-94, Steuben Co.;

John C. Peterson Constr. Corp., 958 Church St., Baldwin, N. Y. LB. $233,380. est. $254,000, 1.96 mi. Smithtown-Fort Salonga, Pt. 1, S.H. 1048-A, Proj. F-566 (5), FARC. 52-92, Suffolk Co.;

Central New York Constr. Co., Inc., Syracuse, N. Y., LB. $132,723, est. $138,000. 5.06 mi. Monticello Village S.H. 5490, Monticello-Woodbourne Pt. 1, S.H. 8153, R.C. 52-97 Sullivan Co.;

Ador & Booth, 1130 Water St., Watertown, N. Y., LB. $354,461. est. $405,000, 8.38 mi. Copenhagen-Lowville, Pts. 1 and 2, State Hy. No. 1020-847, Proj. F-864 (3), F-1043 (2), FARC. 52-77, Lewis Co.;

John Arborio, Inc., W. Cedar St., Poughkeepsie, N. Y., LB. $1,609,778. est. $2,017,000, 2.58 Thy., 1.97 acc. mi. New York State Thruway-Catskill Sect.—Sub. 3 (Whiteport Kingston Pt. 2); A Town Rd.; Co. Rd. 42 and Service Dr., CT. 52-6. ST. 52-21, Ulster Co. cancelled bids to have been opened Sept. 18, 0.8 mi. Brooklyn-Queens Expressway (Cont. 15) Proj. U-1066 (9), FA. BQE 52-1, Kings Co. est. $510,000. Bids Sept. 18. CD 8/28.

▲ PENNSYLVANIA—State Hy. & Bridge Auth., 506 North Office Bldg., Harrisburg,

Allegheny Asphalt & Paving Co., Bingham and 8 Sts., Pittsburgh, Pa., LB $877,851. constr. 2,123 ft. retaining walls and ramps, and driveways on Penn-Lincoln Parkway between Liberty Bridge and 10th St., T.R.U.S. 22 and 30, Allegheny Co.;

Adams Eidemiller, Inc., Greensburg, Pa., LB $2,512,566, constr. 29,865 ft. divided highway of r-conc. pavement 24 ft. wide on each side of divisor and 4 bridges. Final sect. of Allentown By-Pass, Rte. U. S. 22, Northampton Co. Bids Sept. 19. CD 8/28.

PENNSYLVANIA—State Hy. Dpt., 506 North Office Bldg., Harrisburg,

Putnam & Greene, Inc., Box 2012, Fort Wayne 3, Ind. CA $564,377. wide'n and overlay 42,353 ft. existing pavement with crushed aggregate base and bit. surf. 22 ft. wide, TR 255, Elk Co. Bids Sept. 12; awarded Sept. 19. CD 9/17 under LB.

▲† John Tester & Son, 1620 Second St. S.W., Wash., D. C. LB. $1,099,055. 4 dormitories, bachelor officers' quarters, mess, admin. bldg., motor maintenance shop, utilities, No. 53-1, ANDREWS AIR FORCE BASE, MD. U. S. Eng., First and Douglas Sts. N.W., Wash., D. C. CD 7/31, under LB.

Contee Sand & Gravel Co., Laurel, Md. LB. $76,103. road imprvs., Claridge Rd., Montgomery Highland Highland Estates, Proj. No. 367, ROCKVILLE, MD. Montgomery Co. Purchasing Bureau, Court House, Rockville, Md. Bids Aug. 15. CD 8/11.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Planet Constr. Corp., Little Neck Parkway and 72nd Ave., Bellerose, N. Y. LB $1,247,000, (steel);

Caristo Constr. Co., 26 Court St., Brooklyn, N. Y. LB $1,219,000 Alt A, concrete, $1,247,000 Alt B, concrete and steel for new P. S. 191 SCHOOL, E. Williston Ave. between 258 and 259 Sts., BELLEROSE, N. Y. Co-ordinator of School Constr., 49 Flatbush Ave. exten. Brooklyn 1, N. Y. Bids Sept. 16. CD 9/2.

Mahony-Troast Constr. Co., 657 Main Ave., Passaic, N. J. CA. $400,000. 3 story OFFICE on site off Wantage Ave., BRANCHVILLE, N. J. Selected Risks Indemnity Co., Branchville, N. J.

M. W. Chappell, Inc., 1219 Good Hope Rd. S.E., Wash., D. C. CA $556,800. 4 story, 63x90 ft., rein.-con., brick, stone OFFICE addn., HYATTSVILLE, MD. Washington Suburban Sanitary Comn., 4017 Hamilton St., Hyattsville, Md. CD 9/4 under LB.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

Va., South Hill—B.A. 10/7—Town, Town Hall, 750,000 gal. per day water treatment plant, approx. 7 mi. 10 in. water supply pipe line. Plans deposit $50. Wiley & Wilson, 905 Peoples Bank Bldg., Lynchburg, engrs. CD 9/18/46.

† Fla., Orlando—ELECTRICAL SYSTEM—B.A. on or about 10/24—U. S. Eng., P.O. Box 4970, Jacksonville, electrical sys. for aircraft parking aprons, Pinecastle Air force Base. Serial No. Eng. 08-123-53-24. CD 1/31/51.

▲ Fla., Miami—B.A. 1/15—Water & Sewer Bd. of Miami, 3342 Dinner Key Dr., sewage disposal works. $27,000,000. CD 11/5/43.

SOON LETS CONTRACT—BUILDINGS

Fla., Tampa—WAREHOUSE—Bull Steamship Line, 1101 Ellamae Ave., soon lets contract, warehouse. Approx. $100,000. Nathan Grout, Forest Hills Dr., engrs.

N. C., Charlotte—TERMINAL—Harris Express, Inc., 1425 N. Tryon St., soon lets contract, truck terminal addn. $100,000. Louis Asbury & Son, 121 Brevard Ct., archts.

Va., Alexandria—HOTEL—Thomas H. Meletis, 734 W. St. Asaph St., soon lets contract 7 story Virginia Hotel. $750,000. W. D. Phillips, 128 S. Royal St., archt. Herbert Manuccio, 930 "F" St., N. W., Wash., D. C., engr. CD 8/19.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† Espy Paving & Constr. Co., 108 E. Bay St., Savannah, Ga., LB $112,986, sewage lift station at Hunter Air Force Base. Inv. 53-11. SAVANNAH, GA. U. S. Eng., Post Office Bldg., Savannah, Ga. Bids Sept. 12. CD 9/4.

FLORIDA—State Road Dpt., Tallahassee,

Belcher Oil Co., 1217 Biscayne Blvd., Miami, Fla. LB $124,596, Job. 9327-101, Palm Beach Co.;

Brinson Constr. Co., 51 St. and E. Broadway Ave., Tampa, Fla. LB $75,785, Job. 9407-108, St. Lucie Co.;

W. L. Cobb Constr. Co., 1102 N. 22 St., Tampa, Fla., LB $118,814, Job. S-271 (4), Union Co.; LB $71,705, Job. 8903-105, Martin Co.; LB $70,716, Job. 7809-105, St. Johns Co.;

Cone Bros. Constr. Co., Caesar and Cumberland Aves., Tampa, Fla., LB $602,260, F-036-1 (2), Hillsborough Co.; LB $94,502, Job. 0800-106 and 0801-113, Hernando Co.;

James H. Craggs Constr. Co., Ocala, Fla., LB $398,721, Job. 3809-107, Taylor Co.;

Georgia-Alabama Paving Co., Brookhaven Rd., Columbus, Ga. LB $203,463, FI-004-3 (7), Hamilton Co.;

J. D. Manly Constr. Co., Leesburg, Fla. LB $91,075, S-341 (1), Lake Co.;

Marion Constr. Co., Ocala, Fla., LB $194,483, Job 3607-107, Marion Co.;

Doyle Pope, Quincy, Fla., LB $227,615, Job. 4602-123, Bay Co.;

A. F. Rich Co., Monroe and Pershing Sts., Tallahassee, Fla., LB. $67,054, S-335 (2), Taylor Co.; LB. $131,689, Job. 0208-104, Citrus Co.; LB. $127,328, C-340 (1), Citrus Co.;

Smith Engr. & Constr. Co., West Pensacola, Fla., LB. $418,466, FI-006-2 (2), Homes and Washington Counties;

C. T. Stockton, Inc., 660 N.W. 54 St., Miami, Fla., LB. $129,474, Job. 8755-150, Dade Co.;

R. H. Strickland, Quincy, Fla., LB. $68,957, Job. 5651-152, Liberty Co.;

George G. Tapper Co. Inc., Port St. Joe, Fla. LB. $88,681, Job. 5106-101, Gulf Co.;

S. M. Wall, Gainesville, Fla., LB. $116,254, S-8 (4), Suwanee Co.;

Robert D. Yancey, Ocala, Fla., LB. $95,773, Job. 7454-150, Nassau Co. Bids Sept. 9. CD 8/28.

Herbert Constr. Corp., 2208 8th Ave., Birmingham, Ala. LB. $298,940. sewage treatment plant, sewer lines, PENSACOLA, FLA. Santa Rosa Island Auth., 14 W. Government St., Pensacola, Fla. Bids Sept. 11. CD 8/25.

† Raymond Diehl, 1214-16 N. Monroe St., Tallahassee, Fla., LB. $143,401, aviation fuel storage facilities at U. S. Naval Auxiliary Air Station, Spec. No. 32718. SANFORD, FLA. P. Wks. Office, Dpt. Navy, Box 365, Charleston, S. C.

Bennett Constr. Co., Montgomery, Ala. CA. $72,100. grading, paving, culverts 4.583 mi. on road from Needmore to Logton, TROY, ALA. Pike Co. Comrs., Troy, Ala. Bids Sept. 9. CD 8/22.

City, City Hall, Cleveland, Miss. Owner Builds. est. $38,000. WW imprvs., CLEVELAND, MISS.

W. E. Blaine Constr. Co., Mt. Olive, Miss. CA $77,954. double bit. surf. tr. road Proj. S 312-2 (1),

Dickerson & Bowen Constr. Co., P.O. Box 177, Brookhaven, Miss. CA. $91,805. double bit. surf. tr. road Proj. S 318-2(1), HAZELHURST, MISS. Bd. Supvrs., Copiah Co., Hazelhurst, Miss. Bids Sept. 12. CD 9/4.

Harbert & Cargile, Monroe Park, Mobile, Ala. CA. $71,061, grading, paving, box bridge 4.958 mi. on county road between Waynesboro and Dyess Bridge, WAYNESBORO, MISS. Bd. Supervs., Wayne Co., Waynesboro, Miss. Bids Sept. 16. CD 9/10.

† W. R. Aldrich & Co., P.O. Box 1751, Baton Rouge, La. LB. $534,808. Morganza Control structure embankment, Phase 4 and 5, Pointe Coupee Parish, Inv. 53-29, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans 9, La. Bids Sept. 16. CD 8/22.

BUILDINGS

LOW BIDS AND CONTRACTS

Jack W. Davis, Huntington, W. Va., CA $150,000. bus TERMINAL, HUNTINGTON, W. VA. Atlantic Greyhound Corp., Kanawha Valley Bldg., Charleston, W. Va.

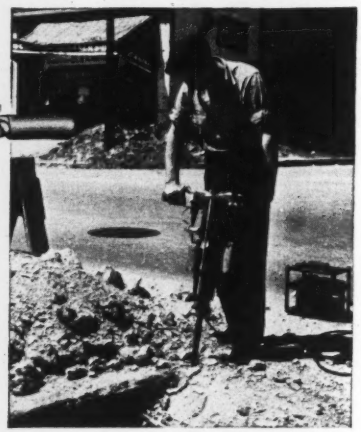
Fowler-Jones Constr. Co., Reynolds Bldg., Winston-Salem, N. C., CA $803,393, CHEMISTRY-RESEARCH bldg., WINSTON-SALEM, N. C. Wake Forest College, Wake Forest, N. C. CD 10/21/46.

Richmond Co. Bd. Educ., 422 7th St., Augusta, Ga. rejected bids Sept. 11, Murphey Junior HIGH SCHOOL, LB $556,538, AUGUSTA, GA. CD 9/18 under LB.

▲† Fred Howland, Inc., 1451 N. W. 20 St., Miami, Fla. CA. $1,624,524. Fleet Sonar SCHOOL bldg. at U. S. Naval Station, Noy 70699. KEY WEST, FLA.

(Continued on page 67)

A PROFITABLE TOOL WITH MANY USES!



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(Continued from page 65)

Sixth Naval Dist., Charleston, S. C. Bids July 16, Awarded Sept. 3. CD 7/9.

Clayton Constr. Co., Orlando, Fla. CA. Approx. $85,000. auto SALES and SERVICE bldg. ORLANDO, FLA. Holler Chevrolet Co., Orlando, Fla. CD 3/6/51.

Hall Constr. Co., Pensacola, Fla., LB $352,181, 55 RESIDENCES, PENSACOLA, FLA. Santa Rosa Island Auth., Pensacola, Fla. Bids Sept. 8. CD 8/25.

A. & O. Builders, 3207½ Metairie Rd., New Orleans, La. LB $325,690. Thomy Lafon Elemenatary SCHOOL, NEW ORLEANS, LA. Orleans Parish School Bd., 703 Carondelet St., New Orleans, La. Bids Sept. 16. CD 8/22.

Industrial Builders Constr. Co., 3107 Havana St., New Orleans, La. Owner Builds, est. $450,000. 23 RESIDENCES. NEW ORLEANS, LA.

▲ **Traylor Bros., Inc.,** Station B, Box 66, Evansville, 12, Ind. LB $1,800,000. POWER PLANT and yard structures, FORD, KY. East Kentucky Rural Electric Co-operative Corp., Winchester, Ky. Bids Sept. 18. CD 9/3.

▲ **Whittenberg Constr. Co.,** 2214 S. Brook St., Louisville, Ky. CA $1,250,000. BUILDING, 7 and York Sts. to be rented to P.O. for parcel post and garage for government vehicles, LOUISVILLE, KY. H. G. Whittenberg, 2214 S. Brook St., Louisville, Ky. Awarded Sept. 19.

G. C. Nowlin Constr. Co., 3400 Sharp St., Memphis, Tenn. Owner Builds. $500,000. 56 RESIDENCES, MEMPHIS, TENN.

▲ **Wilkinson & Snowden, Inc.,** Commerce Title Bldg., Memphis, Tenn., Owner Builds. $1,000,000. 192 RESIDENCES in Park Acres. MEMPHIS, TENN.

Renshaw & Estridge, 5079 Old Summer Rd., Memphis, Tenn. Owner builds. $750,000. 72 RESIDENCES, MEMPHIS, TENN.

Kemmons Wilson, 4985 Summer Ave., Memphis, Tenn., Owner Builds. Approx. $500,000. 120-unit MOTOR COURT. on Hy. 51, MEMPHIS, TENN.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

Mich., Detroit—HEATING PLANT—B.A. 10/7—City Stephen F. Resh, pres., Dpt. P. Light Comn., Contr. PL-10B heating plant imprvs. piping, boiler plant, equip. two 300 hp. boilersments, 600 hp boiler, equipment, stoker piping, installation. Plans deposit $15 refundable, George R. Thompson, city engr. CD 3/30/43.

BIDS ASKED—BUILDINGS

▲ **Mich., Detroit**—HOSPITAL—B.A. 10/21—Herman Kiefer Hospital, Taylor and Hamilton Sts., 5 story, 170x300 ft., brick, steel concrete, 1,100,000 cu. ft. T-shaped tuberculosis hospital, $2,000,000. Plans deposit $100. H. E. Beyster & Assoc., Inc., 2000 Industrial Bank Bldg., archt. CD 5/14.

Wis., La Crosse—HOSPITAL—B.A. 10/21—LaCrosse Lutheran Hospital Assn., 1910 South Ave. hospital addn. $700,000. Boyum, Schubert & Sorenson, Hoeschler Bldg., archts. Extended date. CD 9/12.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Penker Const. Co., 1030 Summer St., Cincinnati, O. CA. $240,170. Est. $247,915, access road from Spring Grove Ave. at Ralston Ave. to site of new central incinerators by grading, paving, const. bridge over Mill creek. CINCINNATI, O. City, City Hall, Cincinnati, O. Bids July 8, Awarded Sept. 5. CD 7/2.

▲ **ILLINOIS**—State Div. Hys., Centennial Bldg., Springfield.

Allied Structural Steel Co., 20 N. Wacker Dr., Chicago 6, Ill., CA. $1,291,561 furnish structural steel for bridge over Illinois River on U. S. 6 Cass and Schuyler Counties. Bids Sept. 9, Awarded Sept. 17. CD 9/12 under LB.

▲ **Dpt. Purchases,** City Hall, Chicago, Ill., bids Sept. 17 cancelled, three sections of tunnel construction for Central District Filtration Plant, CHICAGO, ILL. CD 8/21.

City, Public Lighting Comn., City Hall, Detroit, Mich. Owner Builds. $91,000. 1 story, brick, concrete block SUB STATION, DETROIT, MICH. CD 3/30/43.

J. A. Fredman Contg. Co., Pontiac, Mich. CA $732,400, est. $700,000. sewage treatment plant imprvs., addns., PONTIAC, MICH. City, Ada R. Evans, city clk., Pontiac, Mich. Bids Sept. 4. CD 8/21.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Myers Y. Cooper Co.,** 2649 Erie Ave., Cincinnati, O. Owner Builds. $1,500,000. 20 (rev) one-family 25x80 ft., 20x60 ft. brick DWELLINGS, on Rockwood and W. Rockwood Dr., CINCINNATI, O. CD 4/28.

William O'Rourke, 4534 W. 8 St., Cincinnati, O., Owner Builds $950,000. 66 1½ story brick HOMES on Mt. Alverno, Greenwell Rds., Glenroy Ave and extens. of Schroeder Ave., Delhi Hills. CINCINNATI, O. Leslie Moss, 1210 Drott Ave., Cincinnati, O. archt. Nunlist Floricher, Trac Bldg., Cincinnati, O., engr.

▲ **Donald Easter,** agent, 10 S. La Salle St., Chicago, Zone 3, rejected bids Aug. 25, 17 story, bsmnt., rein.-con. brick APARTMENT and GARAGE, 1540 North State Parkway CHICAGO, ILL. Est. $1,000,000. CD 8/11.

▲ **Welso Constr. Co.,** 2345 S. Crawford St., Chicago, 23, Ill., CA $1,500,000, 1 story, 196,000 sq. ft. WAREHOUSE and FACTORY, 1 story, 6,000 sq. ft. OFFICE, CHICAGO, ILL. Caine Steel Co., 1820 N. Central St., Chicago, Ill. Awarded Sept. 15. CD 7/3.

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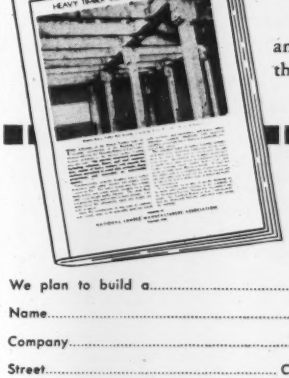

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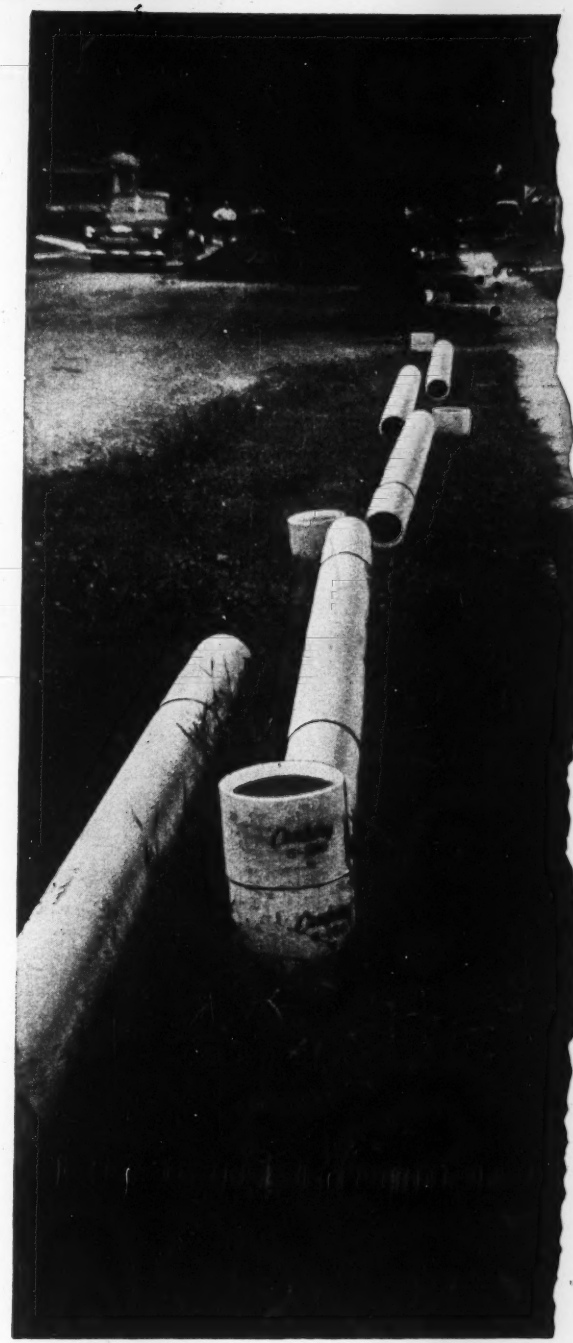
B. H. Bueller Co., 9625 Delmar Blvd., St. Louis 3, Mo.
Ole E. Olsen Co., 823 Perdido St., New Orleans, La.
Phillip D. Barnard, 2830 Addison, Houston 4, Tex.
Western Steel Prod. Co., 1750 W. 13th Ave., Denver 4, Colo.



Another town is thrifty in choosing **"CENTURY"** *asbestos-cement pipe*

This scene—showing a "Century" Pipe installation—could have been made in any of a hundred municipalities throughout the nation. For each year, more and more cost-conscious communities are laying water mains of "Century" Asbestos-Cement Pressure Pipe.

The reasons are as plain as the "one" on a dollar bill. "Century" Pipe is light in weight, easy to handle, yet inherently strong. It can be laid quickly and efficiently. "Century" Simplex Couplings make short work of the joints, too. With these couplings, curves up to 5° deflection per pipe length are taken easily, fewer special bends are necessary, and flexural strains due to settlement or trench loading are minimized.

But the best part comes later! After years and years of service, "Century" Pipe retains its original carrying capacity—because it never tuberculates, rusts or corrodes. It is non-metallic and highly resistant to corrosive soils. In fact, a "Century" water main actually increases in strength over the years.

You just can't beat such long-lasting economy! For *your* next water main, specify "Century" Asbestos-Cement Pressure Pipe.

FREE BOOKLET—*Mains without Maintenance*, gives valuable data, specifications, and reference material on water main pipes. Write for your copy today.

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Keasbey & Mattison has made it serve mankind since 1873.

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For Many Digging Jobs, *Only* the Sherman *Power* Digger is Practical

Get the most out of the excavating equipment you already own or rent by keeping it on your big volume jobs.

For miscellaneous excavating and trenching jobs the Sherman Power Digger is *fully capable* and *far less expensive to operate.* You can buy Digger and Tractor complete for less than many automobiles cost.

The Sherman Power Digger is the answer where giant digging equipment and manual labor are both uneconomical. It reaches 8 feet below ground surface and swings in an arc of 140° with a radius of 10 feet behind the tractor.

For complete information on how the Sherman will cut your digging costs, write today for free literature C36.

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The Sherman Power Digger is attached to a lightweight, rubber-tired tractor giving unmatched maneuverability and transportability.

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Hubbardston, Mass.

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Morris Handler Co., 2718 W. Chicago St., Chicago, Ill., CA, **$500,000**, 11 story HOSPITAL modification, CHICAGO, ILL. Mount Sinai Hospital, 2750 W. 15 St., Chicago, Ill. A. Epstein & Sons Co., 2011 Pershing Rd., Chicago 9, Ill., archts.

Campbell Lowrie & Lautermilch, 400 W. Madison Ave., Chicago, 6, Ill., **$500,000**, 54,000 sq. ft. WAREHOUSE and OFFICE, CHICAGO, ILL. The Walworth Co., 59 E. Van Buren St., Chicago, Ill. Lunstrum & Skubic, 53 W. Jackson Blvd., Chicago, Zone 4, archts. Awarded Sept. 9.

Geo. D. Johnson Co., 420 5 St., Peoria, Ill., LB **$500,000** community HIGH SCHOOL, ELMWOOD, ILL. School District 200, Elmwood, Ill. CD 8/18.

† **Sumner S. Sollitt Co.**, 307 N. Michigan Ave., Chicago, 1, Ill., CA, **$3,770,000**, electronics supply OFFICE bldg., supply depot, GREAT LAKES, ILL. Ninth Naval Distr., Great Lakes, Ill. Bids Aug. 19, awarded Sept. 12. CD 9/12, under LB.

▲ **Thos R. Shaver**, 53 W. Jackson St., Chicago, 53, Ill. CA, **$1,800,000**, chemical and rare earths PLANT expansion, WEST CHICAGO, ILL., Lindsay Chemical Co., West Chicago, Ill. Frazier & Raferty, 315 James St., Geneva, Ill., archts. Awarded Sept. 12.

Elzinga & Volkers, Inc., Holland, Mich. CA **$658,640.** 2 story, brick, masonry Fairmount Elementary SCHOOL, GRAND RAPIDS, MICH. City, H. P. Herrington, secy. Bd. Educ., Grand Rapids, Mich. Bids Sept. 3. CD 8/21.

▲ **O. W. Burke Co.**, 1032 Fisher Bldg., Detroit, Mich. LB $1,548,700. general contract brick, steel, concrete COUNTY-CITY BLDG., incl. municipal and state offices and jail, PORT HURON, MICH. City of Port Huron and Comrs., St. Clair Co., Port Huron, Mich. Bids Sept. 16. CD 8/14.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

† **Hutchinson Constr. Co.**, Fremont, Neb., CA. **$36,480**, repairs to Rand and Cutoff ditch levees, west of Missouri Valley, Inv. 25-066-53-24.

Hart Constr. Co., 668 S. 41st St., Omaha, Neb. CA **$33,832**, repairs to levees, Council Bluffs to Alberts Mills and Pottawattamie Counties and Folsom levee near Missouri River, near Council Bluffs. Inv. 25-066-53-46. IOWA. U. S. Eng., 1709 Jackson St., Omaha, Neb.

† **Korshoj Constr. Co.**, Blair, Neb., CA. **$36,550**, emergency levee repairs on Coulthard Levee, near Missouri Valley. Inv. 25-066-53-71. IOWA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Sept. 10.

† **Perry McGlone Constr. Co.**, 1805 Grand St., Kansas City, Mo. CA. **$81,057**. emergency levee repairs, Mill Creek Levee, near Corning, Inv. 25-066-53-45, MISSOURI. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Sept. 5. CD 6/1/44.

† **W. A. Lynn**, Trust Bldg., Lincoln, Neb. LB. **$506,025.** piles dikes, revetment, Missouri River, Missouri City to Lexington Reach, near Napoleon, Inv. 23-028-53-31, MISSOURI. U. S. Eng., 601 Davidson Bldg., Kansas City, Mo. Bids Sept. 12. CD 9/11 under LB.

Killoren Co., Appleton, Wis. CA. **$743,004.** 428.05 **mi.** rural distr. lines, sys. imprvs., Johnson Co.; ARKANSAS. Arkansas Valley Electric Co-operative Corp., 300 W. College St., Ozark, Ark. H. B. Gieb & Assoc., Bristow Bldg., Ozark, Ark., engrs. CD 6/1/51.

† **Layne-Minnesota Co.**, 140 Snelling Ave., Minneapolis, Minn. LB. **$40,517**, water wells, Fort Berthold Indian Reservation. Inv. 32-015-53-2. NORTH DAKOTA. U. S. Eng., Fort Lincoln, Box 300, Bismarck, N. D. Bids Aug. 26. CD 8/7.

† **U. S. Eng.**, 1709 Jackson St., Omaha, Neb. rejected bids Sept. 16, repair bit. surf. on access road, Inv. 25-066-53-90. SOUTH DAKOTA. Will re-advertise. CD 9/10.

Dobson & Robinson, 823 1st. Natl. Bank Bldg., Lincoln, Neb. CA. **$100,302**, storm sewer in northeast sect. of City, LINCOLN, NEB. City, City Hall, Lincoln, Neb. D. L. Erickson, city engr.

▲† **Storms-Frew Constr. Co.**, 6601 E. 37 St., Leeds, Mo. LB. **$2,117,718.** est. $1,981,662. restore flood levees, 642,000 cu.yd. excav., 800,000 cu.yd. earth fill, 77,000 base stone, Kansas City, Wyandotte Co.

Cunningham Kewit Co., 4229 Lafayette St., Omaha, Neb. LB. **$449,921.** est. $366,885. dike work, 12,720 ft. piling, 68,000 tons stone, Atchison, KANSAS. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Sept. 9.

E. W. Geiger, Inc., First and Topeka Sts., Topeka, Kan. CA. **$68,665.** 11 county bridges, EL DORADO, KAN. Butler Co., El Dorado, Kan. L. W. Newcomber, county engr. Bids Aug. 14.

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City.

Cohenhour Constr. Co., Edmore, Okla., CA. **$75,700,** est. $88,652. 2.97 mi. grade on farm to market road at Francis, Pontotoc Co.; CA. **$128,258.** est. $158,653, grading 7 mi. on farm to market road at Francis, Pontotoc Co. Awarded Sept. 10.

▲ **TEXAS**—State Hy. Comn., Austin,

Austin Contg. Co., P.O. Box 1590, Dallas, Tex., LB **$569,200,** soil cement base and hot mix b. conc. 36.931 mi. Hy. U.S. 183, 283, 82 and 277; C.156-6 and 6-15 and 14, Archer and Baylor Counties;

Dailey & Holifield, Frost Natl. Bank Bldg., San Antonio, Tex., LB **$145,506.** fdn. course, 1 course surf. tr. in shoulders, grading, wid'n structures and asph. pavement 14.85 mi. Hy. U.S. 83 and 277. Proj. C 33-4-15, Jones Co.;

(Continued on page 71)

Another town is thrifty in choosing "CENTURY" *asbestos-cement pipe*

This scene—showing a "Century" Pipe installation—could have been made in any of a hundred municipalities throughout the nation. For each year, more and more cost-conscious communities are laying water mains of "Century" Asbestos-Cement Pressure Pipe.

The reasons are as plain as the "one" on a dollar bill. "Century" Pipe is light in weight, easy to handle, yet inherently strong. It can be laid quickly and efficiently. "Century" Simplex Couplings make short work of the joints, too. With these couplings, curves up to 5° deflection per pipe length are taken easily, fewer special bends are necessary, and flexural strains due to settlement or trench loading are minimized.

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Hammering Down H-PILES for New-Design Canadian Bridge

A new bridge across the Stave River in British Columbia is the first of its type in the world. This steel-truss structure is carried on piers and abutments of steel H-pile and Prepakt-concrete design, which results in less construction time and lower costs than by conventional methods. Naturally, the contractor selected a McKiernan-Terry Double-Acting 9-B-type hammer to drive the vital H-piles.

Samples taken below the river bottom indicated that pile driving conditions were not ideal. Piles had to be hammered to refusal in silt and varying layers of coarse and fine sand. The McKiernan-Terry hammer, however, quickly drove 75-ft batter piles to desired penetration—with the piles projecting up into the Prepakt-concrete.

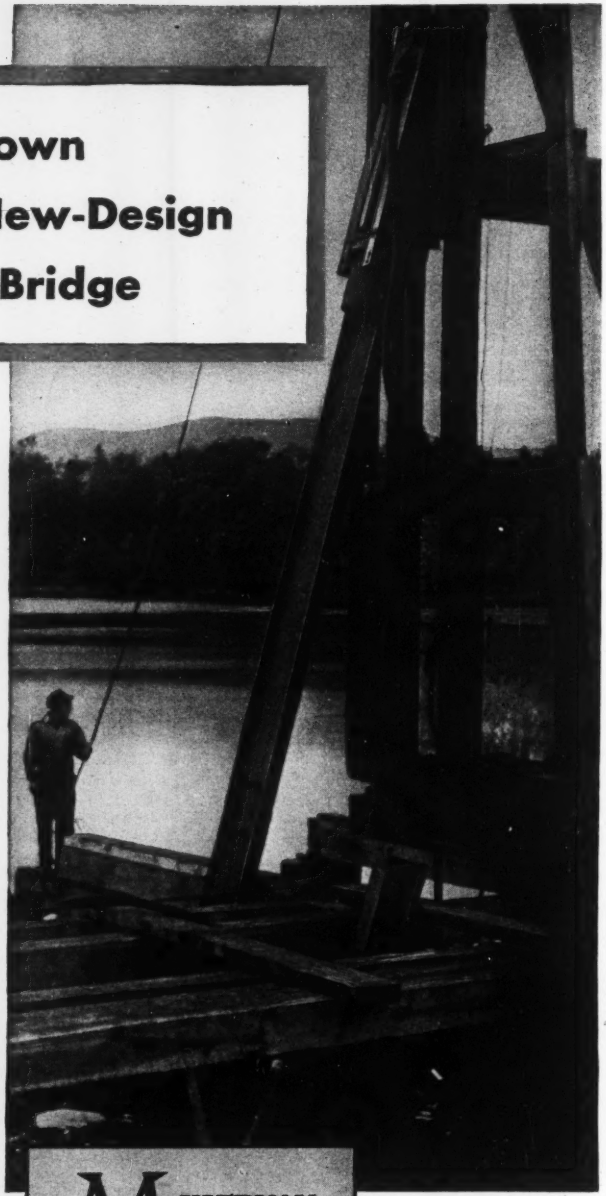
No matter what your pile driving job, you can count on the power and dependability of McKiernan-Terry pile hammers and extractors. Complete McKiernan-Terry line includes 16 sizes of hammers and 2 sizes of extractors. Write for bulletin, giving full details.

Other McKiernan-Terry Products

MEAD-MORRISON COAL AND ORE UNLOADERS AND BRIDGES
Available in a variety of designs and in capacities of 300 to 1500 tons per hour. Exceptional durability proven by installations in service for half a century. Simple controls afford convenient, comfortable and speedy operation.

GRAB BUCKETS
Range of types and sizes take bulk materials loads up to 25 tons. Ruggedness without excess weight.

HONING UP TO 42-IN. I.D. X 55-FT. LONG
Typical of the extensive facilities of McKiernan-Terry for unusual jobs.



McKiernan-Terry Double-Acting 9-B-type Pile Hammer driving batter piles for the Stave River bridge in British Columbia. Northern Construction Company & J. W. Stewart Limited was the contractor.

McKIERNAN TERRY

McKIERNAN-TERRY CORPORATION • MANUFACTURING ENGINEERS • 13 PARK ROW, NEW YORK 38, N. Y.
Plants: Harrison, N. J. and Dover, N. J.

MK317

(Continued from page 68)

Fred Hall & Son, Valley Mills, Tex., LB **$101,678,** grading, structures, base and surf. 5.5 mi. Hy. FM 744, Proj. S 1620 (1), Hill Co.;

Heldenfels Bros., Rockport, Tex., LB **$158,213,** grading, structures, base, surf. 6.628 mi. Hy. FM 1862, Proj. R 1744-1-1, Matagorda Co.;

L. H. Lacy Co., 5630 Yale Blvd., Dallas, Tex., LB **$152,283.** wid'n. c. conc. and b. conc. pavement 0.923 mi. Hy. U.S. 190, Proj. F 401 (2), Robertson Co.;

Hugh McMillan, P.O. Box 1227, El Paso, Tex., LB **$528,166.** wid'n. pavement, resurf., construct shoulders, b. conc. pavement 31.055 mi. Hy. U.S. 80, C 2-11-14 Culberson Co.;

J. W. Perry, 501 Insurance Bldg., San Antonio, Tex., LB **$84,531.** grading, structures, base, surf. 12.667 mi. Hy. FM 583, 1689, 1467, Proj. S 270 (2), Brown and Eastland Counties. Bids Sept. 16. CD 9/4, 9/8, 8/28.

† **Burnett Constr. Co.,** Box 336, Corpus Christi, Tex., CA. **$536,000.** aircraft storehouse. Cont. NOY 72201, Naval Air Station, CORPUS CHRISTI, TEX. U. S. Govt., Officer in Charge of Construction, Naval Air Station, Corpus Christi, Tex. Bids Aug. 19, Awarded Sept. 15. CD 9/16, under LB.

Austin Paving Co., 1000 Singleton Blvd., Dallas, Tex. LB **$624,618.** est. $70,000. asph. paving of streets, etc., in West Dallas Housing Proj. DALLAS, TEX. Dallas Housing Auth., 2525 Lucas Dr., Dallas, Tex. Bids Sept. 11. CD 9/4.

† **U. S. Eng.,** 100 W. Vickery St., Fort Worth, Tex. Own Forces. Approx. **$100,000.** repairing and imprv. 4 maintenance docks, Carswell Air Force Base. FORT WORTH, TEX. CD 9/9.

† **List & Clark Constr. Co.,** Railway Exchange Bldg., Kansas City, Mo., CA. **$713,013,** channelization of the Rio Grande River, fish and wildlife refuge to San Marcial, Middle Rio Grande Proj. Spec. DC-3620, NEW MEXICO. Bureau Reclamation Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. Bids Aug. 21, Awarded Sept. 11. CD 8/28, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Miller Stauch Constr. Co.,** Railway Exchange Bldg., Kansas City, Mo. CA. Est. Approx. **$1,500,000.** 300,000 sq. ft. PLANT and OFFICES, paving 300,000 sq. ft. parking area, Seventh St. trafficway and Kindelberger Rd. on 45 acre site, KANSAS CITY, KAN. Auto Transport, Inc., Div. General Motors Corp., E. D. Rellert, plant mgr., Fairfax Industrial Dist., Kansas City, Kan.

Patti Constr. Co., Inc., 1340 Admiral St., Kansas City, Mo. CA **$609,000.** Contr. No. K-26. PLANT YARD STRUCTURES at Kaw Power Station, KANSAS CITY, KAN. Bd. P. Utilities, Kansas City, Kan. CD 9/11, under LB.

J. B. Drake, 4116 Villanova St., Houston, Tex., Owner Builds. Approx. **$375,000,** 12 masonry type DWELLINGS, HOUSTON, TEX. CD 9/9.

▲ **BMFP Constr. Co.,** Lubbock, Tex., LB. **$1,441,500,** 20-story bsmnt. OFFICE, LUBBOCK, TEX. Great Plains Insurance Co., 2347 19th St., Lubbock, Tex. Bids Sept. 15. CD 8/27.

Bassenberg & Ellison, Northridge Park, San Antonio, Tex., Owner Builds. approx. **$350,000.** 25 DWELLINGS, SAN ANTONIO, TEX. CD 9/5.

C. M. Caskey, 625 W. Summit St., San Antonio, Tex. Owner Builds. Approx. **$450,000.** 30 DWELLINGS, SAN ANTONIO, TEX. CD 9/5.

▲† **Robert E. McKee General Contractor,** 485 S. Wyoming Ave., Albuquerque, N. M., LB. **$1,853,700,** 80 MAGAZINES, four bldgs. Wingate Ordnance Depot, Eng. 29-005-53-2. WINGATE, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Sept. 16. CD 9/3.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Washington**—B.A. 10/15—Bureau Reclamation, Dept. Interior, Coulee Dam, completion of river channel slope protection, Grand Coulee Dam, Columbia Basin Proj. Spec. No. DC-3803. adv. ENR 10/2.

† **California**—B.A. 10/16—Bureau Reclamation, Dpt. Interior, Folsom, constr. Camp Creek tunnel and access road, Sly Park Unit, American River Division, Central Vally Proj., near Placerville, Spec. DC-3806. adv ENR 10/2.

† **Washington**—B.A. 10/28—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, installing two 6,315 kva, 95-percent power factor, 240 rpm, 4,160 volt, 3-phase, vertical-shaft, 60-cycle, open-type, air-cooled, hydraulic-turbine-driven, generators for Chandler Power Plant. Spec. No. DC-3804. adv. ENR 10/2.

▲ **Calif., Sacramento**—B.A. 10/30—City, City Hall, Schedule A-L sewage treatment plant; Schedule B-L. S diversion structural, 72 in. influent line, between sump and plant, Schedule C-L.S 78 in. effluent line, $4,490,000. Plans deposit $50, P & S city Eng., C. C. Kegnedy, 604 Mission St., San Francisco, engr. CD 2/2/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

WASHINGTON—State Hy. Dpt., Olympia, **Northwest Const. Co.,** 3950 6 Ave., N. W., Seattle, Wash., LB **$739,252,** 2 rein.-con. bridges and paving 3.9 mi. Highway 2, east of Tanner, King Co. Bids Sept. 16. CD 9/10.

"NOTHING COULD BEAT DUMPCRETES FOR THIS JOB"

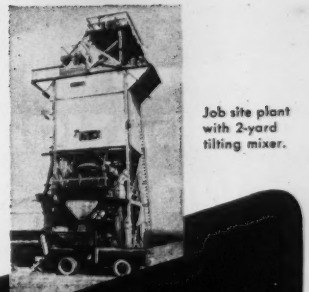
says M. C. Warmbier, Project Manager, Bates and Rogers Construction Co.

The new B. & O. railroad tunnel near Clarksburg, W. Va. was a tough concrete placing job . . . particularly the 3-foot-high ballast wall on both sides of its entire 3236 foot length.

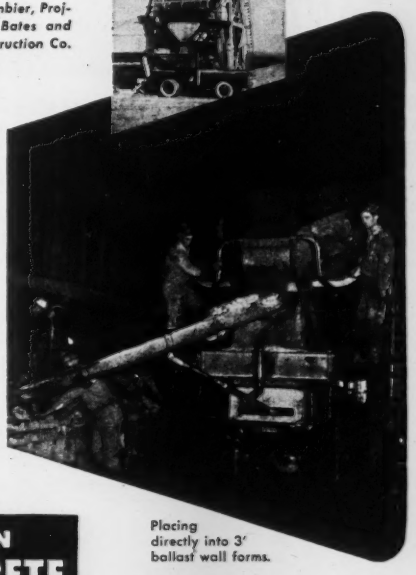
"Three Dumpcretes mounted on 1½' sub frames drove along the wall and placed directly into the forms through standard 13-foot chutes," reports Mr. Warmbier. "Nothing could beat Dumpcretes for this job."

Concrete totalled 30,000 yards, including that used for sides and roof.

To settle dust, one body was converted into a combination concrete hauler and water wagon by the addition of a spray bar at the rear. Send coupon today for more interesting facts on 2, 3 and 4-yd. models.



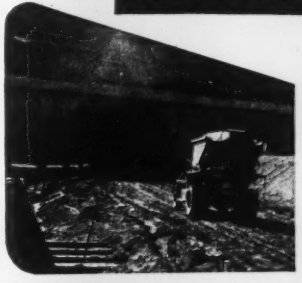
Job site plant with 2-yard tilting mixer.



Placing directly into 3' ballast wall forms.

Fastest from plant to pour

MAXON DUMPCRETE



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V-type 4-cyl. 15 to 30 H.P.

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Because Wisconsin Air-Cooled Engines are supplied in a complete power range, from 3 to 30 H.P., in 4-cycle single cylinder, 2- and 4-cylinder types, there is an ideal size to fit all types of machines and power applications within this range, without wasted power and with maximum power service benefits. Heavy-duty construction, combined with extremely compact design and light weight are added advantages—and dependable AIR-COOLING permits trouble-free service under all climatic conditions.

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WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

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A 7111-½-R-5

P. & J. Artukovitch, M. Miller Co., 377 N. Busker Hill, Los Angeles, Calif., LB, $527,571, installing sanitary sewers and pumping station in Garvey Ave., POMONA, CALIF. City, 250 W. 4 St., Pomona, Calif. Bids Sept. 16. CD 8/21.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Harris Const. Co., P. O. Box 109, Fresno, Calif. CA $1,297,898. Sequoia Junior High SCHOOL, Hamilton Ave. between 9 St. and Cedar Ave. on 10 acre site, FRESNO, CALIF. Fresno City Unified School Dist., Fresno, Calif. Bids Sept. 11, awarded Sept. 15. CD 8/19.

Dowd-Hoefer Co., Box 425, Fontana, Calif., LB. $844,890 est. $600,000, Polytechnic High School, AUDITORIUM, RIVERSIDE, CALIF. Riverside City School District, Riverside, Calif. Bids Sept. 11. CD 7/30.

▲ Pruitt Constr. & Equipment Co., 8617 4 Ave., Inglewood, Calif., CA. $1,135,000, 227 frame, stucco DWELLINGS, on Leland Ave., Tract 17769, WHITTIER, CALIF. Leland Gardens, Inc., 8617 4 Ave., Inglewood, Calif. Southwest Drafting Service, 2724 W. Florence Ave., Los Angeles, Calif., archts.

▲ John D. Lusk & Son, 9244 Olympic Blvd., Los Angeles, Calif. Owner Builds, $1,163,900, 103 frame, stucco dwellings, Avonbury Ave. and others, Tracts 16885 and 18262, WHITTIER, CALIF.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

N. S., Greenwood—SEWAGE DISPOSAL PLANT—B.A. 10/7—C. J. Connolly, engr., c/o Defence Constr. Ltd., 1032 Gottingen St., Halifax, N. S., sewage disposal plant at R.C.A.F. Station, Approx. $300,000. Plans deposit $100.

SOON LETS CONTRACT—BUILDINGS

▲ Ont., Toronto—WAREHOUSE, etc.—Simpson's Ltd., 176 Yonge St., soon lets contract, 470x640 ft., frame brick warehouse and service bldg., Lawrence Ave. W. and Beechmount Ave., $2,000,000. F. S. Corley, c/o owner, ch. archt. Margison & Babcock, 119 Isabella St., Toronto, Ont., engrs. John B. Parkin Assoc., 717 Church St., Toronto, Ont., archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Fort Constr. Co. Ltd., 11742 129 St., Edmonton, Alta., CA, $141,275, 1 course c. conc. walks, concr. base for bit. surf. walks, EDMONTON, ALTA. City, Civic Block, Edmonton, Alta. Bids Aug. 28, awarded Sept. 5.

▲ Northern Constr. Co. and J. W. Stewart Ltd., 1304 Hornby St., Vancouver, B. C., CA, $7,157,401, raising level at Lac du Bonnet to 834 ft. at McArthur Falls power Development, Winnipeg, MANITOBA. Manitoba Hydro-Electric Board, Phoenix Bldg., Winnipeg, Man. Bids Sept. 8, awarded Sept. 15. CD 8/12.

T. S. Stephens 150 Prince Edward St., St. John, N. B., CA, $125,411, 2 mi. paving CHATHAM, N. B. Municipality Chatham, N. B.

Thomas S. Stephens, 150 Prince Edwards St., St. John, N. B., CA, $125,441, street repairs 2 mi. on Main St., SUSSEX, N. S. Town, A. E. Dean, Mayor, Town Hall, Sussex, N. B. Awarded Sept. 12.

ONTARIO—Dpt. Highways, Toronto, Ont. (Prov. Govt.)

Blyth Constr. Co., 7 St. Andrews Gardens, Toronto, Ont., CA, $200,000, bridge over Mississippi River 4 mi. up from here, Arnprior. Bids Sept. 5. CD 8/19.

BUILDINGS

LOW BIDS AND CONTRACTS

Burns & Dutton Concrete, Calgary, Alta., CA, $314,600 1 story, brick, steel technical wing of new high SCHOOL, MEDICINE HAT, ALTA. Medicine Hat School Board Medicine Hat., Alta. Bids Aug. 28, awarded Sept. 5. CD 8/13.

Ambrose Wheeler Ltd., 19 Wesley St., Moncton, N. B., CA, $400,000, 1 story 200x200 ft., steel, brick parts and service DEPOT, MONCTON, N. B. Chrysler Corp. of Canada Ltd., 2450 Chrysler Center, Windsor, Ont. L. H. Schwindt & Co., Queen Elizabethway, Burlington, Ont., engrs. CD 7/28.

Candian Machinery & Industries Ltd., Octagon Pond, Newfoundland, CA, $200,000, oil hardening PLANT HARBOUR GRACE, NEWFOUNDLAND Refining & Hardening Corona Ltd., Harbour Grace, Newfoundland CD 10/17/51.

▲ Standard Constr. Co., 101 Upper Water St., Halifax, N. S., LB, $1,397,349, 161 unit in 53 buildings HOUSING project, HALIFAX, N. S. Central Mortgage & Housing Corp., 1032 Gottingen St., Halifax, N. S. Bids Aug. 20. CD 8/11.

M. Sullivan & Son Ltd., 234 Elgin St., Arnprior, Ont., CA, $400,000, 1 story, F-shaped, 179x249 ft., brick block and frame SCHOOL, HALIBURTON, ONT. Haliburton County District School Bd., Haliburton, Ont. Bids Aug. 29, awarded Sept. 12. CD 8/27.

Mollenhauer Contg. Co. Ltd., 188 Perth St., Toronto, Ont., CA, $167,000, 1 story, part bsmnt., 100x200 ft., steel frame, brick FACTORY, Park Lawn Rd., ISLINGTON, ONT. Stanley A. Grant Ltd., 380 Adelaide St. W., Toronto, Ont. Bids Aug. 18, awarded Sept. 10. CD 8/19.

J. Kemp Constr. Ltd., 121 Vansitmart St., Hamilton, Ont., CA, $150,000, 1 story 60x180 ft., concrete, masonry FACTORY ADDN., HAMILTON, ONT. Porritt & Spencer Ltd., 7 Lottridge St., Hamilton, Ont. Bids Aug. 1. CD 7/28

▲ **Frid Constr. Co.**, 128 King St. E., Hamilton, Ont., CA, $2,500,000, 35 ft high 160x533 ft., PLANT, LONDON, ONT. General Motors Diesel Ltd., East Oxford St., London, Ont.

▲ **M. Sullivan & Son Ltd.**, 234 Elgin St., Arnprior, Ont., CA, $1,344,447, 2 story bsmnt., 149x207 ft. rein.-con. frame, masonry PUBLIC bldg. PETERBOROUGH, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids July 30, awarded Sept. 12. CD 8/19, under LB.

▲ **Foundation Co. of Canada Ltd.**, 1220 Bay St., Toronto, Ont., CA, $1,300,000, 75x206 ft., rein con. frame, brick 13-16th floors main OFFICE ADDN., TORONTO, ONT. Bell Telephone Co. of Canada Ltd., 76 Adelaide St. W., Toronto, Ont. Marani & Morris, 1250 Bay St., Toronto, Ont. archts. Awarded Sept. 12. CD 3/23/50.

▲ **Foundation Co. of Canada Ltd.**, 1220 Bay St., Toronto, Ont., CA, $4,000,000, 1 and 2 story, 250x750 ft., aircraft PLANT, 3 story 100x130 ft. OFFICE wing concrete, steel frame, brick, block, Downsview, TORONTO, ONT. De Haviland Aircraft of Canada Ltd., Downsview, Ont. Bids Sept. 12, awarded Sept. 17. CD 9/4.

▲ **F. H. McGraw Co. of Canada Ltd.**, 1520 Mountain St., Montreal, Que., CA, $2,000,000, foundation for 250x216x175 ft., rein.-con., stone MILL, ASBESTOS, QUE. Canadian Johns-Manville Co. Ltd., Sun Life Bldg., Montreal, Que. CD 11/23/51.

Proposed Projects——

WATER SUPPLY

S. C., Eau Claire—Town, Town Clerk, Town Hall, WW imprvs. $745,000.

▲ **Tex., Midland-City**, voted bonds, misc. items in the general water imprv. program, $1,330,000; pumping station, $350,000; ground concrete storage reservoirs at Well Field, 2 m. gal., each, 35 ft high, $415,000; 43,800 lin. ft. conduit or water supply line from field wells to city limits, $1,400,000; distr. and water gathering lines, $650,000; 10 water supply wells and completely equipping, $400,000; elevated 1 m. gal. steel elevated storage tank, $200,000. H. N. Roberts & Assoc., Lubbock, consult. engrs. Henry E. Nunn, water engr. CD 8/20.

W. Va., Morgantown—City, WW imprvs. $300,000.

SEWERS, WASTE DISPOSAL

Calif., Pismo Beach—City, of Pismo Beach and San Luis Obispo County, City Hall, $242,000 bond election Sept. 23, sewage disposal plant. CD 4/17.

▲ **Calif., San Diego**—City, Civic Center, $3,500,000 bond election Nov. 4, storm drain program, $7,000,000.

▲ **Calif., San Diego**—San Diego Co., Civic Center, sewage treatment plant, disposal plant, Fort Rosecraus Military Reservation, $16,000,000, C. G. Hyde, A. M. Rawn and D. H. Caldwell, 2495 Shattuck Ave., Berkeley, consult. engrs.

▲ **Ill., Centralia**—City, bond election October 14, sanitary and storm sewerage sys. modification and imprvs. $1,400,000. Consoer Townsend & Co., 351 Ohio St., Chicago Zone 11, consult. engr. CD 9/17.

▲ **Mich., East Lansing**—City, City Council, 3 storm relief sewers, $1,300,000, Hubbell, Roth & Clark, Inc., 2640 Buhl Bldg., Detroit, consult. engrs. CD 4/8/52.

Minn., St. Louis Park—Village, J. Justad, clk., voted $200,000 bonds Sept. 9, municipal incinerator. G. M. Orr Eng. Co., 1004 Marquette Ave., Minneapolis, consult. engrs. CD 8/7.

Mont., Hamilton—City, sewerage sys., $270,000, Dr. H. O. Halverson, University of Illinois, Urbana, consult. engr.

▲ **O., Coshocton**—City, sewage disposal plant, sewage sys. $1,067,736. CD 11/29/46.

O., Logan—City, sewage disposal plant. $350,000.

O., Ottawa—Village, $250,000 bond election November 4, sanitary sewerage sys. and sewage treatment plant, $757,000. CD 11/13/46.

▲ **Tenn., Paris**—City, city clerk, City Hall, bond election November 4, sanitary sewer imprvs. $1,000,000. CD 10/2/46.

Tex., Fort Worth—City, c/o W. O. Jones, city mgr., City Hall, imprvs. at city's sewage treatment plant, incl. increasing size of pump bldg. at plant and storm water pumps. $250,000. C. M. Thelin, c/o owner, Dir. P. Wks. CD 2/4/49.

Tex., Midland—City, voted bonds, sanitary sewer lines, sys. imprvs., $540,000; sewage disposal plant, $400,000. H. N. Roberts & Assoc., Lubbock, consult. engrs. CD 8/20.

▲ **Tex., San Antonio**—City, City Hall, Military Plaza, new storm drainage lines, $12,000,000; rehabilitation existing storm sewer sys., $6,000,000; 30 m. gal. daily capacity sewage disposal plant, $4,000,000; rehabilitation and imprvs. existing disposal units, $411,083; No. 1, sewage plant disposal plant unit (Northside) $500,000; No. 2, sewage disposal plant unit (southside) $750,000; No. 3, sewage plant unit (eastside) $350,000; No. 4, sewage plant unit (westside), $400,000. J. L. Dickson, c/o owner, eng. CD 12/20/51.

▲ **Utah., Murray**—City, c/o J. Clifford Hansen, mayor, Murray, voted bonds, sewage disposal plant, $1,300,000. Headman, Ferguson & Carolla, 3308 N. 3 St., Phoenix, Ariz. engrs. CD 8/26.

▲ **Va., Lynchburg**—City, City Hall, sewage treatment plant, $2,750,000. Wiley & Wilson, 905 Peoples Bank Bldg., consult. engrs.

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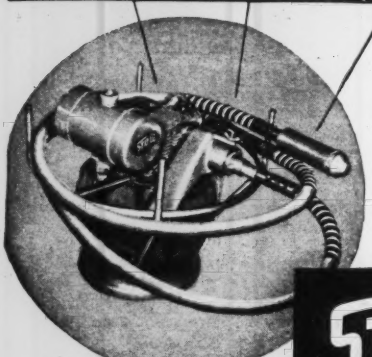

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BRIDGES

Mo., Kansas City—City, Reed McKinley, dir., Dpt. P. Wks., City Hall, exten. of Chestnut viaduct with trafficway connections, $775,000, Howard, Needles, Tammen & Bergendoff, 921 Walnut St., Kansas City, Mo., consult. engrs. CD 3/6.

Wash., Yakima—City, City Hall, voted bonds, Lenox Ave. R. R. overpass. $400,000. H. Hadley, Seaboard Bldg., Seattle Zone 1, consult. engr. A. B. Collins, city engr. CD 7/15.

STREETS AND ROADS

▲ **FLORIDA**—State Rds. Dpt., Tallahassee, 443 mi. toll turnpike from Jacksonville to Miami, $275,000,000, Parsons, Brinckerhoff, Hall & Macdonald, 51 Broadway, New York 6, N. Y., made survey and recommended construction.

▲ **Neb., Omaha**—City, City Hall, 18 and Farnam Sts., long range project for re-surfacing 306 mi. of streets, $4,500,000. Kirkham, Michael & Assoc., 1504 Dodge St., consult. engrs. made survey.

▲ **OHIO**—State Hy. Dpt., c/o Hy. Dir., Columbus, Cuyahoga Co.—widen., relocation and resurf. U. S. Rte. 42 (Pearl Rd.) near Strongsville. $1,400,000. Louis L. Drasler, 10100 Broadway S. E., Cleveland engr.

SOUTH CAROLINA—State Hy. Dpt., Columbia, Lancaster Co.—imprvs. to 45 mi. county roads. $420,000.

Tex., Midland—City, voted bonds, street imprvs. and paving. $475,000. H. N. Roberts & Assoc., Lubbock, consult. engrs. CD 8/21.

▲ **Tex., San Antonio**—City, City Hall, Military Plaza, existing streets paving rehabilitation, grading, drainage, graveling, etc. $2,000,000; permanent type street imprvs., paving, $4,665,120; J. L. Dickson, Ch. P. Wks. Engr.

EARTHWORK, WATERWAYS

Minn., Minneapolis—Hennepin Co., R. F. Fitzsimmons, aud., Court House, dredging of Glen Lake and sloping of shore line, $374,298. [illegible] F. Zimmerman, hy. engr.

▲ **Wash., Centralia**—City, City Hall, Yelm hydro-electric plant addn. $1,500,000. Carey & Kramer, 1917 1 Ave., Seattle, consult. engrs. CD 7/15.

AIRPORTS

† **Calif., Mojave**—**FACILITIES**—Dpt. Navy, San Diego, rehabilitate, addnl. facilities, Marine Auxiliary Landing, $400,000.

† **Calif., Santa Ana**—OFFICERS QUARTERS—Dpt. Navy, San Diego, bachelor officers' quarters at Marine Corps Air Station, NOY 71156, Spec. 32710, $500,000.

▲† **Tex., Kelly Air Force Base**—AIRPORT—U. S. Eng., 606 Santa Fe Bldg., Galveston, hangar, shop for overhauling B-36's and similar; 2 city blocks wide and 4 city blocks long. $14,000,000; 315,150 sq. yds. concrete aprons for very heavy bombers, $1,250,000; new engine test cells, $3,500,000; huge underground gasoline storage sys. $3,000,000.

LATIN AMERICA

Mexico, Mexico City—NATIONAL PRESS CLUB—City Govt., Palacio Municipal, national press club for the Asociacion Mexicana de Periodist (Mexicon Journalists Assn.). Articulo 123, No. 22-1, Mexico City. $500,000.

PUBLIC BUILDINGS

Calif., Bakersfield—HOSPITAL—Greater Bakersfield Hospital Assn., Bakersfield, 100-bed hospital, $646,976.

▲ **Calif., Bakersfield**—HOSPITAL—Bd. Supervs., Kern Co., Court House, 150-bed hospital, service facilities, 1830 Flower St., $1,003,426.

Calif., Los Angeles—SOCIAL SCIENCE BLDG.—University of California, 405 Hilgard St., plans by Risley & Gould, 2502 W. Temple St., convert chemistry bldg. to social science bldg., $600,000.

▲ **Calif., San Francisco**—FIRE HOUSE—City, Dpt. P. Wks., City Hall, bond election Nov. 4, fire house, $4,750,000. CD 4/18/52.

Calif., Woodland—SCHOOL—Woodland County, Bd. Educ., plans by Barovetto & Thomas, 718 Alhambra Rd., Sacramento, branch Woodland High School, $975,000. CD 6/10.

▲ **Colo., Denver**—JAIL—City and County of Denver, City and County Bldg., voted $2,500,000 bonds, county jail.

Conn., Mansfield—PATIENT BLDG.—State, Dpt. P. Wks. Comm., Hartford, plans by Brown & Von Buren, 295 Sherman St., New Haven, girls' patient bldg., enlarging cafeteria, Mansfield State Hospital. $950,000. CD 1/16/52.

Fla., Pensacola—JAIL—Escambia County Comrs., Pensacola, plans by Yonge & Hart, 611 Blount Bldg., county jail $500,000. James Gamble Rogers, 145 Lincoln Wave, Winter Park, consult. engr. CD 9/10.

▲† **Ga., Byron**—ADMINISTRATION—Dpt. Navy, 18 St. and Constitution Ave. N.W., Wash. 25, D. C. administration, maintenance, shops, medical bldg., storage and

(Continued on page 76)

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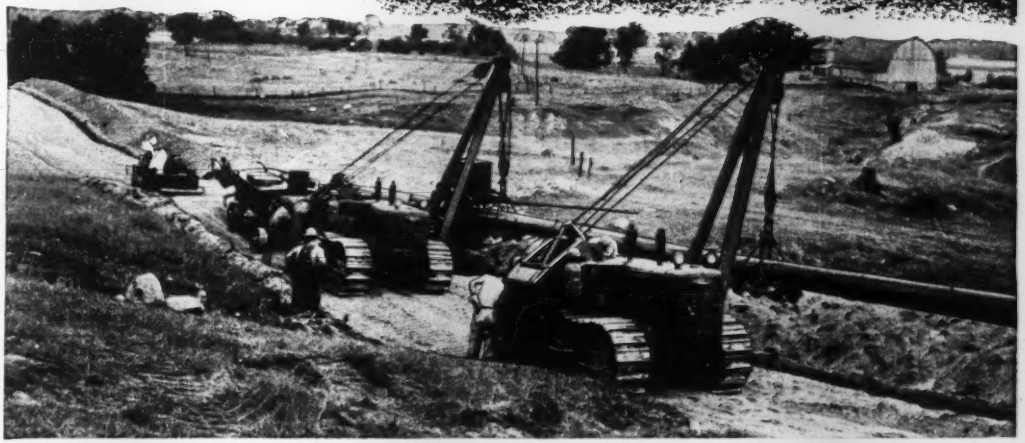

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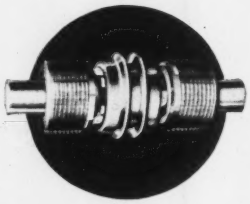

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GEOLOGICAL INVESTIGATIONS

(Continued from page 74)

supply handling, railroads, fencing and utilities at Naval Supply Depot. $9,000,000.

Idaho, Clark Fork—SCHOOL—School Dist. 82, plans by G. A. Pehrson & Assoc., Old National Bank Bldg., Spokane, Wash., high school addn., $600,000.

▲ **Ill., Chicago**—APARTMENT—New York Life Insurance Co., 51 Madison Ave., New York 10, N. Y. plans by Skidmore, Owings & Merrill, 100 W. Monroe St., one 12-story apartment, two 23-story apartments and several 2-story garden type apartments on Lake Meadows Proj. $6,000,000.

Ill., East St. Louis—SCHOOL—School Dist. No. 181, Howard B. Black, supt., Signal Hill, voted $510,000 bonds, elementary school, Signal Hill, Wm. B. Ittner, Inc., 408 Bd. Educ. Bldg., 911 Locust St., St. Louis 1, Mo., archts. CD 8/21.

† **Ill., Granite City**—WAREHOUSES—U. S. Eng., Granite City Engineers Depot, Granite City, 2 warehouses for storing inflammable materials, resawing and box-making shop, seage lift station, 8,000 ft. water main to connect with Granite City Sys. $776,000. CD 1/2/51.

▲ **Ia., Mason City**—SCHOOL—Bd. Educ., $1,200,000 bond election No. 4, school.

Kan., Kansas City—ARMORY—City, City Hall, plans by Reeves & Schlup, 1401 Fairfax Trafficway, Kansas City, Kan., armory. $612,540.

Mass., Somerville—SCHOOLS—City, Mayor's Office, City Hall, plans by Perley F. Bilbert & Assoc., Inc., 53 Central St., Lowell, elementary school, $500,000; elementary school, $300,000. CD 3/3/49.

▲ **Mich., East Lansing**—SCHOOL—City, C. E. MacDonald, supt., plans by Laitala & Nuechterlein, 600 Hollister Bldg., Lansing and Eberle M. Smith Assoc., Inc., 153 E. Elizabeth St., Detroit, 2 story, bsmnt., brick, steel, concrete high school, Abbott Rd. near Burcham Dr., $2,000,000. CD 4/8.

▲ **N. Y., Mt. Pleasant**—OFFICE—General Electric Co., 570 Lexington Ave., New York, Zone 22, headquarters office on 186-acre tract. $5,000,000.

▲† **N. Y., West Milton**—ATOMIC ENERGY PROJ.—Atomic Energy Comn., P.O. Box 1069, Schenectady, Atomic Energy Proj. $4,000,000-$5,000,000. CD 5/16/51.

Okla., Anadarko—COURT HOUSE—Caddo Co., bond election November 4, county court house. $900,000.

▲ **Pa., Phila.**—HIGH SCHOOL—Bd. Educ., 21 St. and Winter Sts. plans by Davis, Dunlap & Carver, 1717 Sansom St., South Phila. High School. $7,000,000. Gravell & Duncan, 1600 Walnut St., consult. engrs. CD 12/19/49.

Pa., Uniontown—GYMNASIUM—Bd. Educ., Uniontown, plans by Emil Johnson, 24 Robinson St., 2 story brick, concrete gymnasium and auditorium addn. to High School. $700,000.

▲ **Pa., Washington**—HOSPITAL—Washington Hospital, Washington, plans by Schmidt, Garden & Erickson, 104 S. Michigan St., Chicago, Ill., 3 story bsmnt., brick, concrete, steel hospital addn. $2,000,000.

▲ **Tenn., Morristown**—HOSPITAL—Hamblen Co., Morristown plans by Bianculli, Palm & Purnell, 501 Cherry St., Chattanooga, hospital. $1,000,000. CD 5/20.

† **Tenn., Tullahoma**—SCHOOL—U. S. Eng., Tullahoma, plans by Taylor & Crabtree, Stahlman Bldg., Nashville, elementary school in 8th District of Arnold Engineering Development Center area. $300,000. CD 11/14/49.

Tex., Austin—RESEARCH LABORATORY—University of Texas, c/o Bd. Regents, Austin, plans by L. White, c/o owner, hydraulic research laboratory. $650,000.

▲ † **Tex., Fort Hood**—SHOP, etc.—U. S. Eng., 606 Santa Fe Bldg., Galveston, general mechanical repair shop, $1,750,000; light equipment repair shop, $1,500,000; heavy equipment repair shop, $2,500,000; misc. units of shop const., $1,500,000; gas distr. sys., $60,000; sanitary sewers, $100,000; storm sewers, $90,000; area earthwork, grading, open drainage, leveling, filling, etc., $100,000; streets and roads, $125,000; water lines, facilities, $75,000.

▲ **Tex., Marshall**—SCHOOLS—Marshall Independent School Dist., Marshall, voted bonds, Junior-High School unit, $400,000; grade school, $350,000; high school, $550,000; elementary school, $450,000. CD 8/21.

Tex., San Antonio—PARKING GARAGE—City, City Hall, Military Plaza, parking garage at LaVillita Village, $750,000. J. L. Dickson, Dir. P. Wks. Eng. CD. 3/7/51, under LB.

Tex., San Antonio—THEATER—City, City Hall, Military Plaza, imprv. and expanding Arneson River Theater and Bolivar Bldg., at La Villita Village, $495,000. J. L. Dickson, P. Wks. Engr. Dir.

▲ **Va., Lynchburg**—HIGH SCHOOL—City School Bd., City Hall, Dunbar High School for Negroes Addn. $1,500,000.

▲ **Va., Norfolk**—HOUSING—Norfolk Redevelopment & Housing Auth., Dickson Bldg., plans by Rudolph, Cooke & Van Leeuwen, Inc., Monticello Arcade, 2 story masonry, Proj. VA-6-2, $2,000,000; 2-story masonry, Proj. VA-6-9, $4,000,000; plans by Alfred M. Lublin, 831 W. 21 St., 2-story masonry, Proj. VA-6-11, $3,000,000. Harrison, Ballard & Allen, 123 E. 77 St., New York, N. Y., consult. engrs.

Wash., Seattle—SCHOOL—Shoreline School Dist. No. 137 St. and Roosevelt Way, plans by John Graham & Co., Dexter Horton Bldg., Zone 4, 1 intermediate school at 25 Ave. northeast and E. 160 St. $750,000. CD 8/11.

▲ **Wash., Tacoma**—COUNTY CITY BLDG.—Pierce Co., County Court House, City, City Hall, bond election November 4, county-city bldg. $6,000,000. CD 1/3.

▲ **Wash., Vancouver**—HIGH SCHOOL—School Bd., voted bonus, senior high school. $2,500,000. D. W. Hilborn, 307 E. 10 St., archt. CD 6/27/51.

▲ **B. C., Essondale**—HOSPITAL UNITS—Dpt. P. Wks., Victoria, 300-bed mental hospital unit and 3 story rein.-con. TB unit, approx. $3,000,000.

▲ **Ont., Sarnia**—POST OFFICE—Postal Dpt., Hunter Bldg., Ottawa, plans by Riddle & Connor, 424 Welling St., London, post office, $2,000,000. CD 9/15.

COMMERCIAL BUILDINGS

Calif., Loma Linda—DENTAL SCHOOL—College of Medical Evangelists, Loma Linda, dental school, $800,000.

▲† **Calif., San Bruno**—HOUSING—Twelfth Naval Dist., San Bruno, plans by Angus McSweeney, 514 Mission St., San Francisco, construct, manage and finance 500 housing units, between El Camino Real and Junipero Serra Blvd., fronting on San Bruno Ave., $5,000,000.

Colo., Del Norte—HOSPITAL—St. Joseph's Hospital, Del Norte, plans by Thomas & Sweet, 224 Colorado Springs National Bank, Colorado Springs, 1 story, hospital addn.; alterations, $632,000.

▲ **D. C., Wash.**—OFFICE—American Association for the Advancement of Science, 1515 Massachusetts Ave., N.W., plans by Architects Collaborative, 5 Riggs Court N.W., 8 story, office bldg. 70x140 ft. flat slab type supported by rein.-con., 15 St., Mass. Ave. and Scott Circle, $1,500,000, General Engineering Assoc., 1928 Eye St. N.W., consult. engrs. CD 7/8.

▲ **Ind., Indianapolis**—DORMITORY—Butler University, 108 E. Washington St., Zone 2, plans by McGuire & Shook, Fletcher Trust Bldg., dormitory for University Air ROTC, $1,000,000.

Mass., Worcester—CIVIL ENGINEERING BLDG.—Worcester Polytechnic Institute, plans by Appleton & Stearns, 53 State St., Boston, 2 story, bsmt., 48x87 ft., brick, limestone civil engineering bldg., $600,000, Congdon, Gurney & Towle, Inc., 53 State St., Boston, struct. engrs., Thompson Eng. Co., 177 State St., Boston, elec. engrs. CD 6/3.

Nev., Reno—STORE—Lerner Shops, 1191 N. Virginia St., plans by Frank Wynkoop, 410 Fulton-Bresno Bldg., Fresno, Calif., store at 153 N. Virginia St. $500,000.

▲ **N. J., Trenton**—OFFICE—Louis H. Cahan & Co. Inc., Market St. Natl. Bank Bldg., Phila., Pa. plans by Harry Sternfield, 1411 Walnut St., Phila. office. $7,000,000. CD 9/13/51.

N. Y., New York—OFFICE—C. I. T. Finance Corp., 1 Park Ave., Zone 2, plans by Kahn & Jacobs, 2 Park Ave., Zone 16, loft and office alterations at 390-06 Fourth Ave. $600,000.

▲ **N. Y., New York**—SCHOOL—Our Lady of Assumption Church, 1634 Mahan Ave., Zone 61, plans by Anthony J. DePace, 151 W. 46 St., Zone 19, 3 story school, Middleton Rd., northeast corner Park View Ave. and 2 story convent on Parkview Ave., southeast corner Roberts Ave. $1,000,000.

N. C., Greensboro—MOTOR COURT—James Thomas, c/o Southern Queen Restaurant, High Point Rd., motor court. $500,000.

O., Cleveland—CHURCH—First Unitarian Church of Cleveland, Dr. Robert Killam, Pastor, Euclid and E. 82 Sts., plans by Small, Smith & Reeb, 1010 Euclid St., brick with white wood trim church on Belvoir Oval, $500,000.

▲ **Okla., Tulsa**—BANK ANNEX—National Bank of Tulsa, 320 S. Boston St., plans by Leon Senter, Philtower bldg., 12 story annex to bank. $1,500,000.

▲ **Pa., Pittsburgh**—CHURCH, SCHOOL—St. Sebastian Roman Catholic Congregation, McKnight and Seebert Rds., plans by McCloskey Co., Liberty and Denny St., church and school, Ross Twp. $1,200,000.

▲ **Pa., Pittsburgh** — NURSES TRAINING — Vincentian Sisters of Charity, Box 118, Perrysville, plans by Walter Butler Co. Inc., 1300 Minn. Bldg., St. Paul, Minn., 3 story bsmnt., 42x229 ft. brick tile nurses training school, McCandless Twp. $1,300,000.

S. C., Charleston—SHOPPING CENTER—Curry Constr. Co., 680 King St., shopping center at The Groves near Mt. Pleasant. $500,000.

▲ **Tex., Dallas**—APARTMENTS—Sam Lett & Assoc., 3336 Inwood Rd., Unit 1, 40 units two-bedroom frame apartments, concrete slab fdn. off Scyene Rd. $310,000; Unit 2, 48 units two-bedroom apartments off Buckner Rd. $365,000; Unit 3, 60 apartment units 2-bedrooms, $425,000; addnl. general apartment units const. located mostly in an extens. of Piedmont Addn. $1,500,000.

▲ **Tex., Daingerfield**—DWELLINGS—Joe Maberry, 6440 Northport St., Dallas, (A) 40 frame cedar post concrete fdn. dwellings, $335,000; (B) 60 frame dwellings, concrete post fdn. $425,000; (C) 50 frame, cedar shake dwellings, air-conditioning, $365,000; (D) 45 frame, brick trim dwellings, concrete slab fdn. $400,000; (E) 35 masonry dwellings, air-conditioning, concrete slab fdn. $350,000; 700 dwellings, $5,287,500.

▲ **Tex., Houston**—DWELLINGS—Herman Kuehn & Son, 4713 E. Shepherd St., 15 frame, masonry dwellings, concrete slab fdn. $450,000; 14 frame with masonry trim dwellings, concrete slab fdn., central heating, air-conditioning, $410,000; 18 masonry dwellings, concrete slab fdn., central heating, $540,000; 10 frame, masonry dwellings, central heating, air-conditioning, $300,000; 12 masonry dwellings, concrete slab fdn., air-conditioning, central heating, 22-acre tract of 100-acre tract off Strey Lane. 10/2/52.

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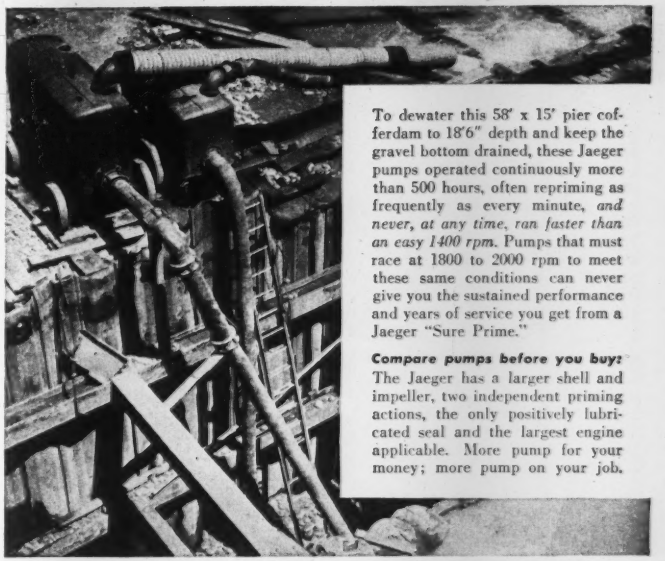

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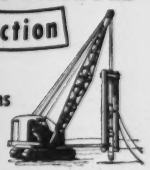

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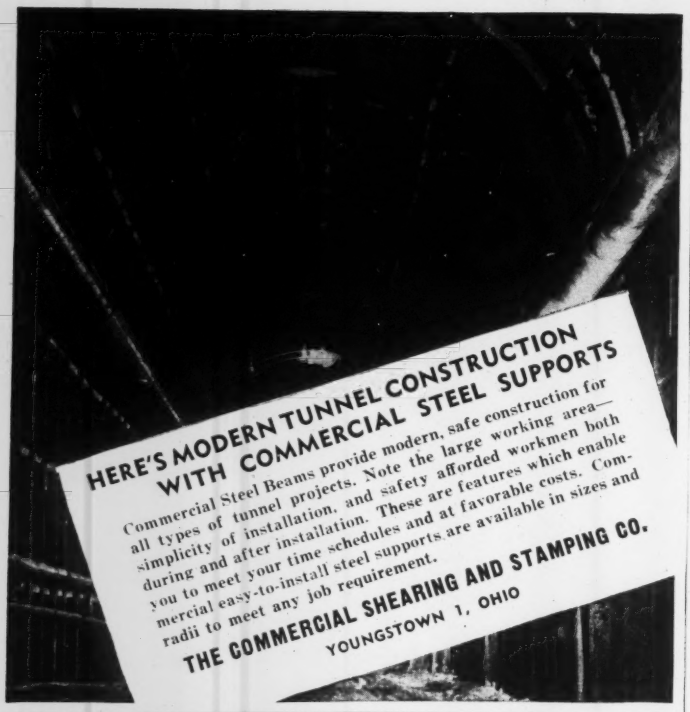
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Wash., Seattle—CHURCH—Greek Orthodox Church of St. Demetrios, Yale Ave. N. and Thomas, church. $500,000.

W. Va., Clarksburg—SCHOOL—Immaculate Conception Roman Catholic Church, Clarksburg, plans by Vecellio & Kreps, Odd Fellow Bldg., Charleston, W. Va., 2 story, brick, concrete parochial high school, $500,000.

INDUSTRIAL BUILDINGS

Calif., Los Angeles—PLANT—Maier Brewing Co., 440 Aliso St., plans by Albert Criz, 2523 W. 7 St., bottling plant and warehouse, $600,000.

Calif., Ontario—SHOPS—Lockheed Aircraft Service Corp., c/o Ontario International Airport, Ontario, plans by George Vernon Russel, 3275 Wilshire Blvd., Los Angeles, aircraft shops and service hangar, $500,000.

▲ Ky., Henderson—MILL—Southern States & Cotton Producers Assoc., P.O. Box 2210, Atlanta, Ga., feed mill, $1,250,000.

▲ Me., Rumford—HYDRO—ELECTRIC FACILITIES—Rumford Falls Power Co., 49 Congress St., Philip Thomas, ch. engr., Rumford, re-development of hydro-electric facilities, generating plant, two 6,400 kilowatt hydro-electric units, $2,000,000, Charles T. Main, Inc., 80 Federal St., Boston, Mass., consult. engrs.

Mo., Olivette (St. Louis 5, P. O.)—PLANT—Carter Carburetor Corp., 2840 N. Spring Ave., St. Louis, Zone 7, assembly plant on 34 acre tract on spur of Rock Island R. R., west of intersection of Price and Olive St. Rds. in and adjoining Olivette, $750,000. CD 2/21/49 under St. Louis County, Mo.

▲ N. Y., Hempstead—GENERATING PLANT—Long Island Lighting Co., 250 Old Country Rd., Mineola, generating plant on Anderson's Island. $25,000,000.

Okla., Sapulpa—PLANT—Liberty Glass Co., Sapulpa, bottling plant addn. $500,000. George F. Collins, c/o owner, engr.

Tex., Bryan—PLANT—International Shoe Co., 1501 Washington Ave., St. Louis 3, Mo., shoe plant, mfg. heeling and soling materials. $750,000. CD 9/17.

Tex., Dallas—FREIGHT TERMINAL—East Texas Motor Freight Lines, 422 N. Walton St., freight terminal, $485,550.

Tex., Fort Worth—WAREHOUSE—Bell Aircraft Corp., c/o Blue Mound Rd., reconstr. warehouse. $550,000.

▲ Tex., Lone Star—GENERATING PLANT Southwestern Gas & Electric Co., Marshall, 40,000 kw electric power generating unit. $3,500,000. Sargent & Lundy, 140 S. Dearborn St., Chicago, Ill. consult. engrs. CD 8/18.

▲ Tex., Longview—GENERATING PLANT—Southwestern Gas & Electric Co., Marshall, 60,000-75,000 kw electric power generating unit at Lake Cherokee. $5,500,000. Sargent & Lundy, 140 S. Dearborn St., Chicago, Ill. consult. engrs. CD 8/18.

Wash., Tacoma—PLANT—American Biscuit & Cracker Co., 1461 Eliot Ave. W., Seattle, plans by John Graham & Co., Dexter Horton Bldg., Seattle, Zone 4, 100,000 sq. ft. cracker plant. $500,000. CD 9/3.

W. Va., Clarksburg—WAREHOUSE—Clarksburg Terminal, Inc., Clarksburg, plans by Glenn C. Hancoc, Atlas Bldg., Charleston, 120,000 sq. ft. brick, concrete, steel warehouse and siding. $400,000.

Alta., Calgary—PLANT—Crane Ltd., 1170 Beaver Hall Square, Montreal, Que., plans by Rule, Wynn & Rule, 513 Eighth Ave. W., Calgary, 50,000 sq. ft. plant. $400,000. CD 9/9.

▲ B. C., Vancouver—MILL EXPANSION—Elk Falls Co. Ltd., c/o Canadian Western Lumber Co., Ltd., 355 Burrard St., Vancouver, B. C., mill expansion, Duncay Bay. $20,000,000. Swan, Rhodes & Wooster, 718 Granville St., Vancouver, B. C., consult. engrs. CD 12/12/51.

▲ Ont., Clarkson—PLANT—National Sewer Pipe Co. Ltd., 320 Bay St., Toronto, plans by Barnett & Rieder, 644 Bayview Ave., Toronto, 150,000 sq. ft., plant, Approx. $1,500,000. Dwight B. Hendryx & Assoc., 6621 Darlington Rd., Pittsburgh, Pa., U. S. A., consult. engr.

Ont., Sarnia — PLANT — Toronto Elevator Co., Queen's Quay Toronto, plant addn., $500,000.

UNCLASSIFIED

California—FISH HATCHERY—State, Div. Architecture, P. Wks. Bldg., Sacramento, fish hatchery, Moccasin Creek, $442,400.

▲ Calif., San Francisco—RAILWAY IMPRVS.—City, Dpt. P. Wks., City Hall, bond election Nov. 4, municipal railway imprvs., $6,620,000. CD 11/10/47.

Colorado—RURAL DISTRIBUTION LINES—White River Electric Assn., Meeker, 81 mi. rural distr. lines, 50 mi. transmission lines, 2 substations, Blanco Co. $600,000, Flora Eng. Co., 56 and Holly Sts., Denver, consult. engrs. CD 10/4/46.

▲ Indiana—PIPE LINE—Indiana Farm Bureau Corp., Purdue-Marott Bldg., Indianapolis, oil pipeline to be run from company's refinery at Mt. Vernon to Peru, sub stations to be built at Switz City, Greene Co. and Joliet ville, Hamilton Co., $5,200,000.

Ia., Des Moines—TELEVISION STATION—Murphy Broadcasting Co., 507 W. 10 St., television station, $421,000, Jansky & Bailey, National Press Bldg., Wash., D. C., consult. engrs.

Ia., Mason City—TELEVISION STATION—Lee Radio, Inc., 12½ Second St. N.E., television station, $343,500, E. C. Page, Bond Bldg., Wash., D. C., consult. engr.

Ia., Sioux City—TELEVISION STATION—Cowles Broadcasting Co., Frances Bldg., television station, $307,500. Craven, Lohnes & Culver, Munsey Bldg., Wash., D. C., consult. engrs.

Ia., Sioux City—TELEVISION STATION—Siouxland Television Co., North 560 Orpheum Electric Bldg., television station, $349,500, Kear & Kennedy, 1302 18 St. N.W., Wash., D. C., consult. engrs.

Kan., Topeka—TELEVISION STATION—Topeka Broadcasting Assoc. Inc., 1035 Topeka Blvd., television station, $523,000, Millard M. Garrison, 1519 Conn. Ave. N. W., Wash., D. C., consult. engr.

Kan., Wichita—TELEVISION STATION—KFH Radio Station Co., RFH Bldg., television station, $661,000, Kear & Kennedy, 1302 18 St. N. W., Wash., D. C., consult. engrs.

Kan., Wichita—TELEVISION STATION—Wichita Beacon Broadcasting Co. Inc., 2829 Salina Ave., television station, $321,000, E. C. Page, Bond Bldg., Wash., D. C., consult. engr.

Kan., Wichita—TELEVISION STATION—Wichita Television Corp., Inc., Fourth National Bank Bldg., television station, $460,000, George C. Davis, Munsey Bldg., Wash., D. C., consult. engr.

Kan., Wichita—TELEVISION STATION—WKY Radiophone Co., Box 8668 Britton Station, Oklahoma City, Okla., television station, $847,000, A. D. Ring & Co., Munsey Bldg., Wash., D. C., consult. engrs.

Ky., Paducah—TELEVISION STATION—Columbia Amusement Co., Inc., Arcade Theater Bldg., television station, $304,000, Kear & Kennedy, 1302 18 St. N.W., Wash., D. C., consult. engrs.

La., Monroe—TELEVISION STATION—James A. Noe, Bernhardt Bldg., television station, $331,000, McIntosh & Inglis, Wyatt Bldg., Wash., D. C., consult. engrs.

La., New Orleans—TELEVISION STATION—James A. Noe, St. Charles Hotel, television station, $836,000, McIntosh & Inglis, Wyatt Bldg., Wash., D. C., consult. engrs.

▲ **La., New Orleans**—WHARVES—Port of New Orleans, Comrs., 2 Canal St., wharves at Charbonnet St. and Nashville Ave., $7,000,000.

La., Shreveport—TELEVISION STATION—KRMD Radio Station 901 Louisiana Ave., television station, $577,000, Commercial Radio Equipment Co., 1319 F St. N.W., Wash., D. C., consult. engrs.

Me., Portland—TELEVISION STATION—Guy Gannett Broadcasting Services, 390 Congress St., television station, $356,500, Craven, Lohnes & Culver, Munsey Bldg., Wash., D. C., consult. engrs. CD 10/19/44.

Md., Baltimore—TELEVISION STATION—Chesapeake Television Broadcasting Inc., 215 N. Calvert St., television station, $600,000, Craven, Lohnes & Culver, Munsey Bldg., Wash., D. C., consult. engrs.

Md., Cumberland — TELEVISION STATION — Western Maryland Broadcasting Co., 450 Byrd Ave., television station, $253,000, Craven, Lohnes & Culver, Munsey Bldg., Wash., D. C., consult. engrs.

Md., Hagerstown — TELEVISION STATION — United Broadcasting Co. of Western Maryland, 128 Prospect St., television station, $213,800, Commercial Radio Equipment Co., 1319 F St. N. W., Wash., D. C., consult. engrs.

Md., Salisbury—TELEVISION STATION—Peninsula Broadcasting Co., Radio Park, television station, $296,000, A. D. Ring & Co., Munsey Bldg., Wash., D. C., consult. engrs. CD 8/25/44.

Mass., Boston—TELEVISION STATION—Hildreth & Rogers Co., Hotel Bradford, television station, $742,500, George C. Davis, Munsey Bldg., Wash., D. C., consult. engr.

Mass., Worcester — TELEVISION STATION—Salisbury Broadcasting Corp., 6 Norwich St., television station, $350,900, Craven, Lohnes & Culver, Munsey Bldg., Wash., D. C., consult. engrs.

▲ **Neb., Omaha**—UTILITIES—Bigger Industrial Growth Ass'n., Morris Jacobs, chn., Electric Bldg., plans by L. A. Daly Co., Insurance Bldg., industrial distr. of 28-acres in the vicinity of 72 and L Sts. incl. grading, paving, gas mains, water mains, sewer lines, trackage. $1,000,000. Henningson, Durham & Henningson, Standard Oil Bldg., Kirkham, Michaels & Assoc., 1504 Dodge St., consult. engrs.

Ohio—PIPE LINE—Ohio Fuel Gas Co., N. Front St., Columbus, 22 mi. high pressure natural gas pipe line in the Toledo-Findley-Fostoria area. Seneca and Wood counties. $850,000.

Texas—COMPRESSOR STATION, GAS LINES—Tennessee Gas Transmission Co., Commerce Bldg., Houston, 2,640 h.p. natural gas compressor station, will contrain 2 compressor units, $880,000; some short gas lines, $65,000 both in vicinity of Carthage. CD 6/6/50.

▲ **Tex., Houston**—PARK—Harris County Comrs. Court, Court House, county park, 2,000 acres, along shores of San Jacinto Reservoir. $2,000,000. CD 1/14/52.

Tex., San Antonio—ELECTRIC SIGNAL IMPRVS.—City, City Hall Military Plaza, traffic electric signal modernization imprvs. $905,000. J. L. Dickson, Ch. P. Wks. Engr. CD 12/18/51.

Tex., San Antonio—PARKS, etc.—City, City Hall, Military Plaza, extensive renovation, remodeling, expanding existing tennis courts, baseball and softball diamonds. $200,000; expans. Riverside Golf Course 9 to 18 hole, playgrounds, $125,000; 18-hole golf course in Highland Park. $175,000; 18-hole golf course in Olomos Basin, $175,000; gymnasium and recreation units, $433,000; new playgrounds, $450,000. J. L. Dickson, P. Wks. Engr. Dir. CD 12/20/51.

Virginia—PIPE LINE—Fredericksburg Natural Gas Co., Fredericksburg, 29 mi. pipe line, Culpeper and Stafford Counties. $746,690.

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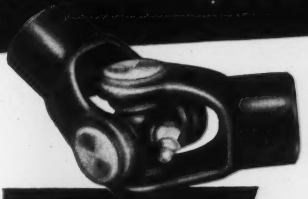

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
October 7, Massachusetts
STREETS AND ROADS
October 7, Massachusetts October 8, Rhode Island

BIDS ASKED—BUILDINGS

▲ **Conn., New Britain**—HOUSING—B.A. 10/21—City Housing Auth., 16 Armistice St., moderate rental housing, Feiffer Tract. $5,839,000. Plans deposit $75. CD 12/31/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Marinucci Bros. & Co., Inc., 51 Ceylon St., Boston, Mass. and **S. A. Healy Co.**, 61 Winchester Ave., White Plains, N. Y. CA $360,254, Shaft 8;
Dravo Corp., Neville Island, Pittsburgh, Pa. CA $530,633, Shaft 9, Contr. 162 A and B constr. shafts city tunnel exten. water, Boston and Somerville, BOSTON, MASS. State, Metropolitan Dist. Comn., 20 Somerset St., Boston, Mass. CD 8/5, under LB.
Associated Constr. Co., 1010 Wethersfield Ave., Hartford, Conn. CA. $930,000, field house addn., University of Connecticut, B/A-D-76-D, STORRS, CONN. State P. Wks. Comn., State Office Bldg., Hartford, Conn. Bids Sept. 3. CD 8/21.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **G. L. Rugo & Sons, Inc.**, 80 Boylston St., Boston, Mass. LB $5,592,000, est. $5,000,000. Proj. 200-21, 504 HOUSING units, Franklin Field, Dorchester, BOSTON, MASS. Boston Housing Auth., 230 Congress St., Boston, Mass. Bids Sept. 12. CD 8/20.

▲ **M. Spinelli & Sons, Inc.**, 79 Milk St., Boston, Mass. LB. $1,858,000, est. $1,800,000. 150 HOUSING units, Popes Hill Sect., Proj. PHA 2-19, Dorchester, BOSTON, MASS. Boston Housing Auth., 230 Congress St., Boston, Mass. Bids 2/21 rejected. CD 4/3, under LB.

▲ **Turner Constr. Co.**, 420 Lexington Ave., New York 17, N. Y. CA. Approx. $1,500,000. mfg. PLANT for bag-filling equip. and bag making machines on 15-acre tract, EAST PROVIDENCE, R. I. St. Regis Paper Co., 230 Park Ave., New York 17, N. Y. Alexander D. Crussett & Assoc., 27 William St., New York, 5, N. Y. engrs.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
October 7, Maryland October 8, Delaware
October 16, New York
STREETS AND ROADS
October 8, Delaware October 16, New York

BIDS ASKED—BUILDINGS

▲ **Md., Baltimore**—COURT HOUSE—B.A. 10/8—City, Bureau Bldg. Constr., 404 Municipal Bldg. remodelling court house, Phase II, $1,500,000 Plans deposit $100. Hal A. Miller, 2118 Maryland Ave., archt. CD 10/1/51.

▲ **Pa., Clairton**—HOUSING—B.A. 10/9—Allegheny County Housing Auth., County Office, Pittsburgh, 3 story, basmnt., 130-family brick veneer apartment, 8 apartment type bldgs. $1,500,000. Plans deposit $50. Celli & Flynn, 3361/2 5th Ave., McKeesport, archts. CD 9/12/50.

N. Y., New York—HOUSING—B.A. 10/15—New York City Housing Auth., 63 Park Row, Zone 7, general constr. and foundations; heating and ventilating; electrical work; plumbing; furnishing and erecting elevators for Jefferson Houses, Proj. No. NY 5-16, Sect. I, incl. Bldgs. 1 to 6 (inclusive), as well as boiler room, coal storage garage, community center and childrens center in area bounded generally by W. 115 St., 1st St., E. 113 St., 2d Ave., Manattan Boro. Plans deposit $75 general constr. $25. elevators. Extended date. CD 9/9.

▲† **N. J., Raritan**—WAREHOUSE—B.A. 10/22—U. S. Eng., 80 Lafayette St., New York, 13, N. Y., 200x1200 ft. warehouse, at Raritan Arsenal, $2,000,000. CD 8/27.

Pa., McKees Rock—WAREHOUSE—Bids Asked—Excel Steel Service, Inc., 200 Bradley St., Pittsburgh, 1 story, brick, block warehousing. $500,000.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Stephenville Homes**, c/o Nat Matson & Stanley Wilson, archts., 171 East Post Rd., White Plains, N. Y., Owner Builds. $1,500,000. 57 HOUSES on tract on Ridge Rd. west of Harisdale Ave., HARTSDALE, N. Y.

▲ **George F. Driscoll Co. & Moccia Constr. Co.**, 41 E. 42 St., New York 17, N. Y. CA. $3,039,000 foundations;
Harry Starkman & Bros., 348 Brook Ave., New York 54, N. Y. CA. $933,700, heating and ventilating;
Wachtel Plumbing Co., Inc., 1345 Cromwell Ave., New York 52, N. Y. CA. $917,000 plumbing contract for Sound View HOUSES, Proj. NYS-58-1 in area bounded generally by Seward, Rosedale, Lacombe, Bronx River and Metcalf Aves., Bronx Boro, NEW YORK, N. Y. New York City Housing Auth., 63 Park Row, New York, N. Y. Grand total $4,889,700. Bids Aug. 22. CD 8/26, under LB.

▲ **Charles & Milton A. Kimmelman**, 745 Fifth Ave., New York 22, N. Y. Separate Contracts. $3,000,000. 18 story OFFICE, Fifth Ave. and 46 St. to be called 555 Fifth Ave., NEW YORK, N. Y. CD 8/20.

▲ **Ocean Crest, Inc.**, c/o Stanley Klein, archt., 89-31, 161 St., Jamaica, N. Y. Owner Builds. $2,000,000. 100 HOUSES on 60-acre site at Waukena Ave and Balsame St., OCEANSIDE, N. Y.

▲ **James Romeo & Assoc.**, 60 Washington St., Tuckahoe, N. Y. LB $1,275,000. Junior-Senior HIGH SCHOOL, Rte. 6, SHRUB OAK, N. Y. Bd. Educ., Central School Dist. 1, Towns of Yorktown, Cortland, Somers, Carmel and Putnam Valley in Shrub Oak Central School, Rt. 6, Shrub Oak, N. Y. Bids Sept. 22. CD 9/8.

▲ **Naamans Homes, Inc.**, 9551/2 N. 66 St., Phila. Pa., Separate Contracts. $1,524,000. RESIDENTIAL DEVELOPMENT, Naamans Creek Rd., CHESTER, PA. Erling Wenge, McClatchy Bldg., Phila., Pa., archt.

▲ **Consolidated Engr. Co.**, 20 E. Franklin St., Baltimore 2, Md., CA Approx. $3,000,000. 1 story, 500x600 ft. rein.-con., steel WAREHOUSE, YORK, PA. E. & S. Realty Corp., 20 E. Franklin St., Baltimore, Md. Caterpillar Tractor Co., 600 W. Washington St., East Peoria, Ill. lessee.

▲† **Blake Constr. Co.**, 33 E. St. S.W., Baltimore, Md., and **William T. Lyons Co., Inc.**, 1760 Friendship St., Baltimore Md. CA. $1,546,000. SERVICE and ANIMAL BREEDING BLDGS., UTILITY BLDG., corral area, BOILER HOUSE addn., crop development, STORAGE SHED, CAMP DETRICK, MD. U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C. CD 9/19, under LB.

▲ **John Tester & Son, Inc.**, 1620 Second St. S.W., Wash., D. C., LB $2,688,349. Wheaton Junior Senior High SCHOOL, ROCKVILLE, MD. Montgomery Co. Bd. Educ., Rockville, Md. Bids Sept. 23. CD 9/18.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
October 15, Louisiana
STREETS AND ROADS
October 15, Louisiana

BIDS ASKED—BUILDINGS

▲ **N. C., Rocky Mount**—HOUSING—B.A. 11/26—Rocky Mount Housing Auth., City Hall, 210 housing units for Negroes. $2,000,000. CD 5/5.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **T. A. Loving & Co.**, 706 Wood Bldg., Charlotte, N. C., LB $1,198,800 Alt. 1; $1,188,200, Alt. 2; $1,168,200 Alt. 3; $1,151,075, Alt. 4; $1,142,425, Alt. 5, for clearing, grading pavements, outside utilities and railroad, Marine Corps Air Facility, NOY 71502, CAMP LEJEUNE, N. C. Dpt. Navy, Officer in Charge of Construction, Box 365, Naval Base, S. C. Bids Act. 2. CD 9/11.

▲ † **Nello L. Teer Co.**, Trust Bldg., Durham, N. C., CA, $1,066,000 clearing reservoir Parcels 1 and 9 Jim Woodruff Dam, Inv. 63-5, FLORIDA U. S. Eng., P. O. Box 1169, Mobile 7, Ala. Bids Sept. 10. CD 9/18, under LB.

▲† **James F. O'Neill Co.**, 1501 S. Rendon St., New Orleans, La. LB. $831,000. Sect. 1A, LB. $816,900, Sect. 1B, refrigeration machines;
A. M. Lockett & Co., Ltd., Whitney Bldg., New Orleans, La. LB. $165,748, steam generating units;
Marley Co., Inc., 222 W. Gregory St., Kansas City, Mo. LB. $115,705. cooling towers for demoisidification sys. at Michoud Ordnance Plant, Inv. 43-23, Michoud, NEW ORLEANS, LA. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **R. H. Pinnix**, Gastonia, N. C., CA. $507,284, brick, concrete masonry Clintwood HIGH SCHOOL, CA. $665,618, brick, concrete masonry Hayel School, CLINTWOOD, VA. Dickenson County School Bd., Clintwood, Va. Bids Sept. 16. CD 9/3 and 8/28.
Massell Companies, 40 Pryor St. Atlanta, Ga., Owner Builds. $750,000, LAUNDRY PLANT, Glen Iris Dr., for lease to National Linen Service Corp., $125,000, WAREHOUSE, 1499 Northside Dr. N.W., ATLANTA, GA.
J. F. Holley, 905 Sixth Ave. N., Birmingham, Ala., CA. $728,300, HOSPITAL, BIRMINGHAM, ALA. Holy Family Hospital, c/o Pembleton & Mims, archts., Title Guarantee Bldg., Birmingham, Ala. Bids Sept. 4. CD 9/10, under LB.

▲ **M. T. Reed Constr. Co.**, 162 Millsaps Ave., Jackson, Miss. CA $20,000,000 nitro-phosphate fertilizer PLANT, PASCAGOULA, MISS. Gulf Improvement Co., c/o contractor.

▲ **Sullivan & Cozzart**, 822 W. Kentucky St., Louisville, Ky. LB. $1,145,620. general constr. HOSPITAL, Brook and Chestnut Sts., LOUISVILLE, KY. Jewish Hospital Assoc., Floyd and Kentucky Sts., Louisville,
W. F. Holt & Sons, 1531 Demonbreun St., Nashville, Tenn. LB. $824,700. Central HEATING PLANT, for State Buildings. NASHVILLE, TENN. State Bldg. Comn., State Capitol, Nashville, Tenn. Bids Sept. 16. CD 8/26.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
November 12, Indiana
STREETS AND ROADS
October 14, Wisconsin

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Austin Co., 16112 Euclid Ave., Cleveland, O., CA Approx. $750,000. Design and construct, transmitter and 905 ft. tower for television station, WNBK, Cleveland at Broadview Rd. and Ridgewood Dr., PARMA, O. National Broadcasting Co. Inc., 30 Rockefeller Plaza, N. Y.

▲ **WISCONSIN**—State Hy. Comn., Madison,
Industrial Contg. Co., 3050 4 Ave. S., Minneapolis, Minn., LB, $502,020, Contract 1, Option "A", C. conc., bridge substructure, Kimberly-Little Chute-Combined Locks (Fox River Bridge and approaches) 0.986 mi. C. T. Hy. N. S-9734 (12) (2), LB, $594,946, Contract 1, Option "B" bridge superstructure on same as above;
McMullen & Pitz Constr. Co., Manitowoc, Wis., LB, $972,299, Contract 1, Option "C", c. conc. and bridge same as above;
Eric Bolander Constr. Co., Libertyville, Ill., LB, $72,724, Contract 1, structure and approaches C. T. H. "A", North County Line Road, S. T. Hy. 38, 0.085 mi. Proj. T 047-1 (4) Racine Co. Bids Sept. 23. CD 9/9.

BUILDINGS

LOW BIDS AND CONTRACTS

Johnson, Drake & Piper, 1138 Baker Bldg., Minneapolis, Minn., CA $769,979, general contract LIBRARY and TRAINING SCHOOL, Wisconsin State College, PLATTEVILLE, WIS. State, bld. Regents of State College, E. R. McPhee, dir., Madison, Wis. Bids Aug. 15. CD 9/10, under LB.

▲ **Plymouth Hills Development Co.**, Plymouth, Mich. Owner Builds. Est. $1,000,000. 52 brick ranch HOUSES, PLYMOUTH, MICH. Warner & Warner, 819 Farwell Bldg., Detroit, Mich. engrs.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
October 7, Iowa October 14, Wisconsin
STREETS AND ROADS
October 7, Iowa October 10, Minnesota

BIDS ASKED—BUILDINGS

▲ **Kan., Manhattan**—STUDENT UNION—B.A. 10/15—State Bd. Regents, Kansas State College, c/o Oscar Stauffer, chn., and Ed. Bldg. state bus. mgr., State House, student union bldg. $1,500,000. John Brown, state archt. CD 2/9/52.

▲ **Tex., Corpus Christi**—HOUSING—B.A. 10/22—U. S. Govt., P. Wks. Office, Civil Engineer, 8th Naval Dist., Bldg. 16, New Orleans, La., construct, manage, finance 340 housing units, NOY 24063. $2,650,000. Extended date. CD 9/17.

▲ **Tex., Angleton** PLANT—Bids Asked—Southern Producing Co., Inc., 1612 Fairfield St., Shreveport, La., and Humble Oil & Refining Co. Humble Bldg., Houston, gasoline production plant 150 m. cu. ft. daily processing capacity. $2,100,000. CD 5/15.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **H. B. Zachary Co.**, P.O. Box 2570, San Antonio, Tex. CA. Approx. $2,000,000. gas line from point near Provident City, TEXAS to Castor, LOUISIANA. Texas Eastern Transmission Corp., Texas Eastern Bldg., Shreveport, La. CD 8/13.

▲ **Brown & Root, Inc.**, 438 E. 13 St., Brownsville, Tex., LB $738,265, hot mix asph. street paving, Units 1 through 46; $728,794, Units 47 through 94, BROWNSVILLE, TEX. City, Brownsville, Tex. Bids Sept. 11. CD 8/14.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Weller Bros. Constr. Co.**, Paradise, Kan. CA Total $3,000,000. 3 story, 15,000 kw POWER PLANT, on 80 acre tract, GREAT BEND, KAN. Western Light & Telephone Co., 2015 Forest Ave., Great Bend, Kan. Bids Aug. 19, awarded Sept. 13. CD 8/12.

▲ **Girdler Corp.**, 224 E. Broadway, Louisville, Ky., and **Foster Wheeler Corp.**, 165 Broadway, New York, N. Y., CA. Est. $16,000,000. design and construct nitrogen fertilizer PLANT, LAWRENCE, KAN. Consumers Co-operative Assn., 318 E. 10 St., Kansas City, Mo. CD 11/23/51.

▲† **H. B. Nicholson**, 880 E. Colorado St., Pasadena, Calif., LB. $1,544,000, 38 ammunition MAGAZINES, Spec. 34745, McALESTER, OKLA., U. S. Govt., Officer in Charge of Construction, 8th Naval Dist., Bldg. 16, Naval Station, New Orleans, La. Bids Sept. 18. CD 8/27.

▲ **W. P. Atkinson**, Plaza Bldg., Midwest City, Okla., Purchase and Hire. Approx. $4,000,000. 125 ranch type HOMES, MIDWEST CITY, OKLA. Treat Eng. Co., Plaza Court, Oklahoma City, Okla., engr.

▲ **Dickason-Goodman Lumber Co.**, 923 E. 3 St., Tulsa, Okla. Purchase and Hire. $1,500,000. 150 RESIDENCES, W. Edison and Union Aves., TULSA, OKLA. J. O. Conner, 923 E. 3 St., Tulsa, Okla., archt.

▲ **Noser Constr. Co.**, McAllen, Tex., CA $1,264,000. Multiple story COURT HOUSE, EDINBURG, TEX. Hidalgo Co., Edinburg, Tex. Bids Sept. 15. CD 9/22, under LB.

▲ **T. C. Bateson Constr. Co.**, 618 Irwin-Keasler Bldg., Dallas, Tex., CA $1,397,800, superstructure for 254 DWELLING units for thirty-four 2-story bldgs., Tex. 17-4, GALVESTON, TEX. Galveston Housing Auth., Galveston, Tex. Bids Aug. 28. CD 9/3, under LB.

Texas Gulf Constr. Co., Inc., 2008 S. Wayside St., Houston, Tex., CA. Approx. $871,000. 121x563 ft., steel, rein.-con., newsprint STORAGE or WAREHOUSE, outside utilities, HOUSTON, TEX. Houston Chronicle, Chronicle Bldg., Houston, Tex. Bids Sept. 18. CD 9/16.

▲ **Robert E. Nesmith**, 6738 Long Dr., Houston, Tex., CA. $1,195,389, STUDENT UNION, MEN'S DORMITORY, WOMEN'S DORMITORY, HOUSTON, TEX. Texas Southern University, 3201 Wheeler St., Houston, Tex., Bids Sept. 16. CD 9/22, under LB.

▲**BMFP Constr. Co.**, Lubbock, Tex., CA $1,441,600 20 story bsmt. OFFICE, LUBBOCK, TEX. Great Plains Insurance Co., 2347 19th St., Lubbock, Tex. Bids Sept. 15. CD 9/22. under LB.

O. G. Bradbury, 1217 N. 1st. St., Albuquerque, N. M. CA. Approx. $875,000. 3 story HOTEL, incl. swimming pool, sundeck, balconies, etc., ALBUQUERQUE, N. M. Leo F. Corrigan Interests, Mercantile Bank Bldg., Dallas, Tex. CD 11/20/51.

▲† **Robert E. McKee**, 485 S. Wyoming Ave., Albuquerque, N. M. CA $1,853,700, 80 MAGAZINES. 4 bldgs., Wingate Ordnance Depot, Eng 29-005-53-2, WINGATE, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Sept. 16. CD 9/22. under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
October 15, 16 California
STREETS AND ROADS
October 15, California

▲† **Calif., March Air Force Base**—OPERATIONS BLDG. B.A. 10/15—U. S. Eng., 751 S. Figueroa St., Los Angeles U. S. A. F. security operations bldg., Eng.-04-353-53-27 $1,000,000. Plans deposit $25. CD 5/21/51.

BIDS ASKED—BUILDINGS

▲ **Calif., Los Angeles**—HOUSING—B.A. 10/14—Housing Auth. of Los Angeles, 14 to 10 E. First St., frame, stucco Pueblo Del Rio low-rent housing, Project Cal 4-15 $1,000,000. T. Criley. Jr., 510 W. 6 St., Los Angeles, and H. C. Burge, 510 Knight Way, La Canada, archts. CD 9/18/50.

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

▲ **WASHINGTON**—State Hy. Dpt., Olympia,

Morrison-Knudsen Co., Inc., 314 Broadway, Boise, Idaho, CA, $2,384,061, Battery St. subway section of Alaskan Way Viaduct in Seattle, King Co. Bids Sept. 16, awarded Sept. 17. CD 9/19, under LB.

▲ † **Bennett Campbell, Inc.**, Seaboard Bldg., Seattle 1, Wash., CA, $1,196,611, Schedule B;

Seneca Constr. Co., 2823 Martin St., Spokane, Wash., CA, $115,568, Schedule C, bachelor officers' quarters bldg., 4 airmen's dormitories, mess and administration bldg., etc. Fairchild Air Force Base, Inv. 53-2, SPOKANE, WASH. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Aug. 28. CD 9/3, under LB.

▲ † **Teichert & Son, Inc.** and **Bressi & Bevanda**, Box 397, Baldwin Park, Calif., LB, $3,747,319, San Gabrel River Improvement, Whittier Narrows Flood Control, etc. ENG 04-353-53-5, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Sept. 18. CD 8/27.

▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldg., Sacramento,

McCammon-Wunderlich Co. & C. K. Moseman, P. O. Box 1023 Palo Alto, Calif., LB, $1,447,396, grading 7.5 mi. rein.-con. bridge between 2 mi. east of Redmond Overhead and Corral Hollow Rd., Alameda and San Joaquin Counties. Bids Sept. 17. CD 8/25.

† **San Francisco Bridge Co.**, 503 Market St., San Francisco, Calif., LB, $839,300, seawall and dredge, extend runway 13-31 at U. S. Naval Air Station, NOY 75173, Spec. 35369, ALAMEDA, CALIF. Twelfth Naval Dist., San Bruno, Calif. Bids Sept. 17. CD 9/8.

BUILDINGS
LOW BIDS AND CONTRACTS

▲ **Hadley-Cherry**, 8754 Beverly Blvd., Los Angeles, Calif., CA, $1,336,320, 175 frame, stucco DWELLINGS, on Manning, O'Malley and Murray Aves. in tracts 18318, AZUSA, CALIF. Cerritos Park Homes, 8754 Beverly Blvd., Los Angeles, Calif.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Ont., Toronto**—ROYAL CANADIAN AIR FORCE BLDG. —B.A. 10/7—Defence Constr. Ltd., 441 Queen's Quay W., 3 story L-shaped, concrete, brick, stone Royal Canadian Air Force Bldg. $1,500,000. Plans deposit $100. Extended date. R. P. Opie, c/o owner, regional engr. Marani & Morris, 1250 Bay St., archts. CD 9/4.

BIDS ASKED—BUILDINGS

▲ **Ont., Port Arthur**—HOSPITAL IMPRVS.—B.A. 10/21 —Dpt. P. Wks., Parliament Bldgs., Toronto, pavilions and connecting passages, and laundry bldg. at mental hospital, N. Algoma St. $1,000,000. G. N. Williams, c/o owner, deputy minister and ch. archt. CD 2/23/50.

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

▲ **Rayner-Atlas Ltd.**, 275 Huron St., Toronto, Ont., and **Perini, Pitts, Walsh & Assocs.**, 38 Commercial Rd., Toronto, Ont., CA, $118,000,000, second 5½a mi. power tunnel 45 ft. inside diam., for electric power development;

Horton Steel Works Ltd., 40 Jennet St., Fort Erie, Ont., CA, $2,000,000, steel work on 5 penstocks for new hydro-electric power development addn., Niagara Falls, ONTARIO. Hydro-Electric Power Comm. of Ontario, 620 University Ave., Toronto, Ont. Bids Sept. 2, awarded Sept. 19. CD 8/22.

Fabi & Fils Ltd. 150 Belmont St., Sherbrooke, Que., CA, $495,522, bridge sub-structure;

MacKinnon Structural Steel Co. Ltd., 7 Industrial St., Sherbrooke, Que., CA. $626,940, steel superstructure, 1,224 ft., rein.-con., structural steel bridge 36 ft. roadway, two 5 ft. sidewalks, over Magog River, at Jacques Cartier St., SHERBROOKE, QUE. Municipality, City Hall, Sherbrooke, Que. Bids Sept. 15. CD 8/28.

BUILDINGS
LOW BIDS AND CONTRACTS

▲ **Standard Constr. Co.**, 101 Upper Water St., Halifax, N. S., CA. $1,397,249, 161 HOUSING units, in 53 buildings, Proj. F.P. 1/52, HALIFAX, N. S. Central Mortgage & Housing Corp., 1032 Gottingen St., Halifax, N. S. Bids Aug. 20. CD 9/22, under LB.

TRINITY WHITE
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Use Trinity—the *whitest* white cement. A true portland cement that meets ASTM and Federal specifications. Trinity is first choice for architectural concrete units, terrazzo, stucco, paint and other uses. Gives a pure white and true colors when pigments are added. Ask for Trinity. General Portland Cement Co., 111 W. Monroe St., Chicago; Republic Bank Bldg., Dallas; 816 W. 5th St., Los Angeles; 305 Morgan St., Tampa; Volunteer Bldg., Chattanooga.

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UNIT PRICES

Overpass, Louisiana

A $4.2-million overpass structure and approaches, under way by the Louisiana Department of Highways, will span the Union Passenger Terminal tracks in New Orleans. This 0.781-mi project has two 40-ft roadways on one end and two 28-ft roadways on the other, with roadway center portion varying and situated partly on a grade and vertical curve and partly on a horizontal curve and superelevated.

Work includes timber pile foundation, concrete footings, concrete and steel bents, steel spans, concrete deck, aluminum handrail, electrical work, deck drainage, and miscellaneous paving and utilities. The mercury vapor lighting consists of furnishing, erecting and wiring a complete system including the incandescent lights in the end castings and connecting same to feed points established by the New Orleans Public Service Company.

Traffic is to be maintained at all times during the period of construction.

The estimated daily volume of traffic is 30,000 vehicles.

J. A. Kinkead is the project control engineer.

Work began in July and must be complete in 480 days.

Bidders include:

1C Farnsworth & Chambers Co Inc, Houston $4,228,031
2 Boh Bros Constr Co, New Orleans 4,233,527

Bids: 5-7-52 Items	Unit	Quantity	Unit Prices 1 C	2
Clearing	ls	1	$8,000	$100
Grubbing	ls	1	7,500	250
Common excavation	cy	15,000	$1.50	$1.00
Structural excavation	cy	36,470	4.50	1.50
Subgrade treatment, 12"	sy	12,250	0.75	0.91
18"	sy	32,142	1.10	1.36
PCC pavement, 8" uniform	sy	31,910	3.82¹	4.61²
6" uniform	sy	12,481	3.52¹	3.96²
4" uniform	sy	9,241	2.64¹	2.93²
Poured fill, asph mineral	t	2	85.00	100.00
Tie bar assembly	lf	17,190	0.75	0.12
Concrete, class A	cy	19,846	48.00	54.00
Deformed reinf steel	lb	2,439,742	0.12	0.098
Fabric reinforcement	lb	222,737	0.10	0.096
Fabricated carbon stl	lb	9,368,298	0.141	0.1572
silicon stl	lb	1,166,256	0.156	0.1918
Relaying drain pipe	lf	30	5.00	10.00
Untreat timber piles	lf	395,100	1.26	1.00
Unloaded test piles, 85'	ea	18	500.00	600.00
Loading test piles	ea	18	$2,500	200.00
ROW markers, conc postsea		60	$7.50	5.00
Integral conc curb, bar typ.	lf	7,122	2.25	0.60
conc lip curb	lf	7,168	1.50	0.64
Catch basins	ea	6	150.00	430.00
Adjust cat bas, inlets, pipe, junc & manholes	ea	26	40.00	35.00
PCC walk, 4" thick	sy	2,755	3.50	3.21
Removing old pavement	sy	34,805	1.70	1.42
old walk	sy	7,784	0.40	0.50
old curb	lf	13,210	0.20	0.25
CI water pipe, 6"	lf	120	3.90	7.00
12"	lf	520	8.50	10.20
30"	lf	1,476	60.00	39.70
CI pipe for rdway dr, 5"	lf	6,150	4.00	6.25
Aluminum pipe handrail on structure	lf	13,007	6.00	7.04
on wall & stairways	lf	201	35.00	41.24
Circ stl protected curb	lf	1,626	3.75	3.00
Mercury vapor lighting	ls	1	$32,375	$35,885
Wire & cond from feed point to str	lf	1,000	$3.50	$2.85
Service manholes	ea	8	105.00	205.00
Ventilators	ea	18	100.00	111.00
Manholes in structures	ea	7	200.00	206.00
Additional spec castings	t	1	475.00	700.00

Bids: 7-23-52 Items	Unit	Quantity	Unit prices 1 C	2
Valve box for 30" water main	ea	1	$2,150	$3,000
12" water main	ea	3	$18.00	$32.00
6" water main	ea	2	18.00	25.00
Water valve, 30"	ea	1	$3,000	$3,000
12"	ea	2	335	318
6"	ea	1	115	121
Removal of catch basins	ea	19	$55.00	$35.00
New catch basins	ea	16	185.00	140.00
Drainage manholes, 6'-8'	ea	16	165.00	240.00
8'-10'	ea	4	210.00	300.00
10'-12'	ea	13	260.00	375.00
Manholes with grating cov	ea	9	170.00	160.00
Sanitary sewer manholes 10'-12'	ea	4	260.00	325.00
Fndn lumber, sewer pipe	Mfbm	20,000	85.00	90.00
Sand backfilling	cy	3,000	2.00	2.00
Shell bedding, f sewer pipe	cy	300	3.60	3.75
Shell surfacing	cy	600	3.60	3.50
PCC pavement, 8" uniform	sy	1,000	7.25	6.00
Bituminous base course	t	50	9.00	9.00
leveling course	t	50	9.00	9.00
Constr temp wooden stairs	ls	1	$1,250	$1,510
Conc drain pipe, 6"	lf	80	$1.50	$1.50
Conc drain pipe, 10"	lf	1,122	2.00	2.50
12"	lf	230	2.25	3.50
15"	lf	125	2.75	4.00
RC drain pipe, 18"	lf	30	4.00	5.35
21"	lf	440	4.50	5.75
24"	lf	955	6.75	7.25
27"	lf	600	8.00	9.00
30"	lf	990	9.50	11.50
36"	lf	750	12.50	14.50
Exc for drain pipe	cy	6,750	1.90	0.75
Vitr clay sewer pipe, 6"	lf	40	2.00	2.00
8", 0'-12'	lf	50	4.00	7.40
8", 12'-16'	lf	660	5.50	9.90
CI pipe sewer, 8"	lf	75	7.50	12.75
Extra exc to 12' to remove stumps	cy	200	3.00	1.00
	cy	25	7.00	2.00
House drain cleanouts	ea	8	45.00	18.00
Reloc. & adjus exist fire hydrants	ea	8	50.00	100.00
New 3300 volt S & WB cable	lf	800	9.00	10.50
Progress signs	ea	2	100.00	150.00

Highway, South Dakota

A South Dakota Highway project on U.S. 16 brought close bidding—the two low bids were less than 1% apart. The highest of the ten bids was only 14% above the low bid.

Work consists of placing a 1½-in. bituminous treated crushed gravel surface 24-in. wide on a 9-in. base course placed in 1947.

The average haul of the crushed gravel is 25 miles.

H. C. Rempfer, of Pierre, is the state highway engineer; Thor Soleglad, assistant.

Hourly wage rate to be paid for equipment operators is $1.85; for truck drivers, $1.25; and for common laborers, $1.15.

Contractor supplies all material.

Work began May 26, 1952 and must be complete in 85 working days.

Bidders include:

1C Summit Constr Co, Rapid City, S D $314,388
2 C. H. Linn Constr Co, Rapid City, S D 315,047
10 The Haggart Const Co, Fargo, N D 367,414

Bids: 4-18-52 Items	Unit	Quantity	Unit Prices 1 C	2
Exc, unclassified	cy	2,259	$1.00	$0.35
Water for compaction	M gal	33	3.00	3.00
Stab grav surf, shoulders	t	7,006	2.691	2.16
Cr grav surf, base	t	1,125	2.50	2.12
Primer liq asph base	gal	1,216	0.20	0.16
Liq bitumen, tack coat	gal	39,367	0.16	0.16
Liq bitumen for mat	gal	604,608	0.16	0.14
Flush seal bitumen	gal	18,932	0.17	0.20
Plant mixed in aggr	t	42,731	4.30	4.72
RC pipe, 36" flared end section	ea	1	130.00	25.00

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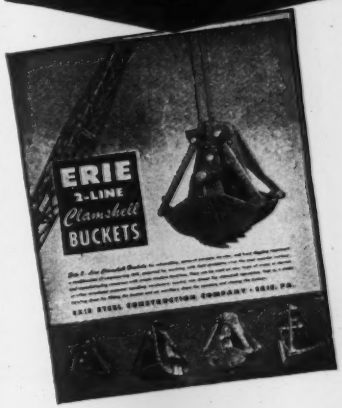

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GWILYM A. PRICE, president of Westinghouse, tells why the problem of plant location is "overwhelmingly complex." The company, now in the midst of a $296-million expansion program, will be adding 20 more plants in at least 13 states.

Decisions must be made on basic needs, such as labor supply, site cost, raw materials, and product distribution.

"Selecting a plant location is similar to a sea captain's iceberg problem."

Westinghouse seeks places to spend construction money

Why does a company build an industrial plant in Columbus, Ohio, instead of Denver, Colorado, or Boston, Massachusetts? What are the factors that lead a company to spend its construction money in one city instead of another? Last week, Gwilym A. Price, president of Westinghouse Electric Corp., which is in the middle of a $296-million expansion program, told how the big utility answers these questions.

Westinghouse has an ambitious construction program. Now nine months old, the expansion program will run through 1953. It will involve 20 additional plants which will cost about $176 million.

The 20 new factories will be located in at least 13 states from New York to Texas. Many of the sites remain to be chosen. Most will produce defense goods in the beginning, but all are permanent and will be converted to manufacture of civilian products as soon as the defense program permits.

Behind this expansion is one of the nation's largest concerns with 125,000 employees and a payroll last year of $472 million. The reason for the current expansion is pointed up in the company's sales figures. Its sales have expanded from $270 million in 1940 to $1.2 billion in 1951.

Typical of the plants going up in the Westinghouse program is the one at Columbus, Ohio, where steel erection is now under way. This plant was delayed three months by the recent steel strike. Now steel erection crews are racing to meet the completion deadline. When finished, the plant will make assemblies for jet engines. Eventually, it will produce electric refrigerators.

The Columbus plant, located on a 350-acre site, will cover more than 2,000,000 sq ft of floor space. The factory will be two stories high and the office building section will be three stories. The building was designed and is being built by Ebasco Services, Inc., of New York.

Vice-president J. H. Ashbaugh, of Westinghouse, said Columbus was chosen as the site "because of its excellent municipal and transportation facilities as well as the ability of the public utilities to provide needed services for the manufacturing needs of the new plant."

• **Where they build**—Other Westinghouse officials described in some detail how the company selects suitable sites for new plants—and what insures a new construction job for a community.

Gwilym A. Price, president of Westinghouse, analyzed the problem this way:

"The problem of location may appear overwhelmingly complex—and it is. There are 4,270 communities of 2,500 population or more in the United States. They have 226,000 miles of railroads along which plants could be located and 300,000 miles of regular truck lines.

"However, the number of possible locations quickly diminishes when the specific needs of the operation are analyzed. For example, to test our new air-arm division's products, a modern airport with extra-long runways was a must. This immediately

reduced the number of possible sites.

"In locating a new television plant, the search was reduced to television broadcasting areas. Our electronic tube plants required water of specific analysis. Sheet steel supplies were vital to the location of a new appliance plant.

"Once such special factors have been considered, however, the selection is based on a number of economic and social conditions. The more important of these might include raw materials, transportation, labor availability, amount of land and its cost, utility services, location in regard to distribution of the product, taxation, housing, climate, and the attitude of the community toward business.

"Although this seems like a long list, it is really only a small portion of the outline prepared to aid Westinghouse division managers in selecting a new plant site. As a matter of fact, a new consideration has been added just recently. That is the need to spread out defense plants for security reasons."

• **Must meet basic needs**—An actual report on a city recently under consideration for a new plant illustrates the points made by Price. The city was listed as "very desirable" for the following reasons:

Labor supply was several times more than was required. Labor wage rates were fair and turnover was low. Satisfactory sites on highways and railroads were available at reasonable prices. The city was large enough to soften the impact of change for supervisors' families who would have to move to the new location.

School and church facilities were adequate, as were shops and stores. The county was free of debt, indicating a stable tax rate. Water, gas, sewerage, and railroad facilities were available at the property line. Interstate trucking was available. The community had vocational schools which could participate in training programs. The city had a definite plan for attracting new industry and it genuinely wanted Westinghouse as an industrial neighbor.

Westinghouse said this location was unusual because it offered so many advantages in addition to basic needs. A site is nearly always ruled out by Westinghouse if even one basic factor is missing.

The company officials have a number of stories which illustrate the pitfalls field teams encounter.

In one case, after a favorable preliminary investigation, the field team returned to the town. Checking into a hotel near the proposed site, the first thing the team noticed in the hotel lobby was a large sign which said, "Water shortage! Waste Not, Want Not!"

One chamber of commerce offered Westinghouse a 200-acre site which featured a large, deep gravel pit, located in the center of the tract. Westinghouse men protested. When they did, the chamber of commerce suggested that the gravel pit could be used as a water storage pool. But Westinghouse did not want to build a manufacturing plant in the shape of a railroad roundhouse—and that site was rejected.

Another site was crossed by a large stream. Local boosters admitted the ground was flooded during high water, but they pointed out that the company could build dikes to keep out the flood waters.

Other chambers of commerce are frank, and even go out of their way to point to disadvantages. In the Midwest, a chamber of commerce official told the investigating team that the labor supply was insufficient and would be further depleted by reactivation of a large military base—a fact only he knew.

• **The "iceberg" problem**—"In some ways," Price said, "this problem of selecting a new plant location is quite similar to a sea captain's problem with an iceberg. He doesn't worry as much about the part of an iceberg he can see as he does about the underwater portion that can stave in the hull and sink the ship.

"On the surface, a number of considerations are immediately evident; but finding the right answers to even the most obvious requirements—and exploring other influences less immediately apparent, is quite a job."

In a national company, according to Price, there is no one man or even a single group of men deciding where new plants shall be located.

Westinghouse policy is to operate each manufacturing division as a self-contained company. That leaves the final decision on a new plant up to the division manager. Plant selection is a vital factor in the success of his enterprise and he and his aides know more about their operation and specific problems than anyone else.

However, the division manager has access to outside consulting services, headquarters specialists and others who can advise him. The company also has a planning committee composed of headquarters executives. This committee acts as an advisory board.

• **Community cooperation** — Sometimes, the company finds that community or company action—or both—can correct a minor disadvantage standing in the way of a town getting a new Westinghouse plant.

In Sharon, Pa., home of the firm's main transformer plant, hotel facilities were totally inadequate. So the company cooperated with local business leaders, formed a corporation and built a hotel.

After the hotel was constructed, most of the Westinghouse stock in the hotel was turned over to a local hospital. The firm kept just enough stock to make sure it could get a room when it wanted one, a Westinghouse official commented wryly.

Price said states and cities, which spend millions each year to attract new industries, often fail to realize that improper location of a plant can harm both community and company.

In explanation he said that too-rapid influx of new industry can harm a community by out-distancing regular community services. Too many industries of the same kind also can work to the disadvantage of a town.

Price analyzed the problem of labor supply and then took up another subject which has become increasingly important in selection of new plant sites—taxes.

"It is obvious," Price declared, "that direct taxes on business become an element of the cost—and, of course, price—of products sold to the consumer. The manufacturer in one state who has lower taxes gains a definite advantage over a competitor in another state who pays higher taxes. Therefore, taxes cannot be overlooked when new plants are being considered.

"When studying the tax situation, perhaps the thing a company fears most is instability. Even if the tax picture is favorable at the moment, there are often straws in the wind that indicate trouble ahead."

• **Rising taxes in the South**—"Several southern states offer examples of possible instability which may lead to higher taxes," Price said. "These are states which face quite a job in building up their educational systems. Because such a large share of tax revenue must go for schools, taxes may be expected to rise more sharply in those particular areas. Before locating a

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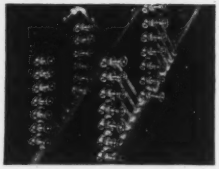

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American firm of engineers, internationally known, is interested in acquiring a top flight executive to expand its promotional activities.

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P-5544, Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

new plant in such a region a company must weigh that future possibility."

West Virginia offers an example of a state with an unfavorable tax law, Price said. The law he mentioned is a gross sales tax on the value of all products manufactured in West Virginia. The state does not permit the manufacturer to deduct the value of component parts which are parts which are shipped in from another state for assembly.

Price said Pennsylvania and Massachusetts have tax structures which discriminate against one class of taxpayers.

But taxes are not a primary consideration, Price said. Only after several possible sites are chosen does the matter of taxes receive serious study, he said.

"But an unfavorable tax picture can definitely sway the balance between two sites equal from other standpoints," Price stated.

• **Where to get site information**—Another Westinghouse executive, G. E. Garnhart, manager of the real estate and insurance division, said chambers of commerce are among the best sources of information on new plant sites.

Generally, they are able salesmen for their community. But Garnhart said that often Westinghouse finds it impossible to locate a suitable site in a community which would otherwise be ideal.

"Usually, the trouble can be traced to lack of organized planning for local industrial development," Garnhart said. "So often we find that the most attractive industrial sites are cluttered up with a few substantial homes or commercial establishments which make the cost of sites prohibitive compared with alternative sites elsewhere."

Garnhart recommended that alert promotion groups should carefully survey all potential industrial sites and prepare topographical survey maps and aerial photographs which clearly indicate the amount and character of the available land.

"On such survey maps," Garnhart said, "it is important to indicate location and size of the nearest water, gas and electric lines, sewers, etc."

Westinghouse has adopted the policy of buying initially at least 5 to 10 times as much land as the original plant will occupy.

"Since all new plants are being located in suburban or rural sections, the present cost of such extra land is only a small fraction of what it would cost several years after the plant has been established."

Public housing bond costs worry PHA

A total of 73 housing authorities in 23 states last week sold new issues of bonds totaling $170.7 million. Within a few days, most of the issues had been sold. But, in Washington, the Public Housing Administration cast a worried glance at the sale.

PHA's troubled air was easily explained. The new issues, maturing over 40 years, and completely backed by the federal government, carried an average interest rate of 2.57%. This compared with an average interest cost of 1.96% in the last big sale of public housing bonds, held in January.

Conceding that the higher rate was "fair" because of present unfavorable market conditions, PHA warned that unless there is a marked reduction in market yields for the housing bonds in coming months, there is not likely to be another sale this year.

The successful bidder on the bonds was a syndicate which has bid in more than 80% of the housing bonds in past sales. This time, it captured all of the awards. The syndicate was headed by Blyth & Co., Phelps, Finn & Co., and Lehman Brothers. Other managers of the syndicate were Smith, Barney & Co.; Shields & Co.; First Boston Corp.; Goldman, Sachs, & Co.; Harriman Ripley & Co., Inc., and R. W. Pressprich & Co.

Last week's sale extended the permanent financing of the federally backed public housing program beyond the $600-million mark.

• **Dallas proposes record issue**—Other bond news last week came out of Dallas, Tex., where the Dallas Independent School District proposed a record-high $24.8-million bond issue to finance a major expansion program.

Voters will decide on the issue in a special ballot Oct. 18. The new issue would be substantially higher than the $16.5-million program approved in 1949 and now virtually completed.

School officials said the new issue would cover school housing projects to be started or planned during the next two years.

The 1949 program, covering a three-year span, was offered to the voters on the condition that costs would not exceed 73 cents a cubic foot. With the outbreak of the Korean war, however, costs spurted to as high as 94 cents a cubic foot. As a result, the new bond issue is based on costs of $1 a cubic foot.

• **Cities warned**—In another development, the Municipal Finance Officers Assn. noted that municipal bond sales hit a record high during the first six months of 1952, and cautioned cities to "exercise restraint in municipal capital improvement programs."

Total municipal bond sales for the first six months reached $2.5 billion, compared with total sales of $1.5 billion during the similar period in 1951, and $2 billion for the similar period in 1950.

The association recommended that "new debts incurred by cities be created only for essential projects which have been designed and for which construction will proceed." Current borrowings, the association advised, should be kept to a minimum.

ENR Cost Indexes correction

ENR cost index values for 1950 in the table which appeared top of page 80, ENR Sept. 4, 1952, should have read as follows:

	Construction Cost	Building Cost
October	535.6	397.4
November	529.2	390.2
December	530.0	391.4
1950 Average ...	509.4	375.5

Indiana calls for bids on $4-million toll bridge

Indiana's State Toll Bridge Commission announced last week that construction bids on a $4-million toll bridge across the Ohio River at Lawrenceburg will be received Nov. 12.

This will be the first toll bridge ever built by the Indiana state government. The span will be financed by a revenue bond issue to be retired over a 25-year period by receipts from toll charges. Bids on the revenue bonds are scheduled to be received Nov. 21.

The bridge, which will be known as the Indiana-Kentucky Memorial Bridge, will be erected at the southeastern edge of Lawrenceburg and will connect with Indiana Routes 48 and 1, and U. S. 50 in Indiana, and with Kentuck 20 in Kentucky.

Indiana Highway Department officials said the structure will be a steel arch bridge of three spans and will measure 3,825 ft from bank to bank. It will carry two lanes of traffic. Approaches to the bridge will be built by both Indiana and Kentucky.

Meanwhile, the Indiana commission announced that plans are progressing on another toll bridge which will be built across the Wabash River directly east of Mount Vernon. It will connect Indiana 762 and Illinois 141.

Activity This Week

As reported to ENR (in millions of dollars)

Contracts by type of work

	This Week	Cumulative 40 wks 1952	1951	% chge
Waterworks .	$3.3	$172.6	$164.3	+5
Sewerage	3.6	225.3	259.9	—13
Bridges	11.8	302.1	264.1	+14
Highways ...	17.0	1,181.0	940.6	+26
Earthwork, waterways .	3.4	381.6	427.7	—11
Buildings:				
Public	24.5	3,803.2	1,745.5	+118
Housg., pub.	16.7	524.3	560.6	—6
Housg., priv.	54.5	2,333.2	1,509.3	+55
Commercial	9.0	479.5	509.9	—6
Industrial..	66.8	2,069.5	3,372.9	—39
Unclassified.	23.7	1,018.0	1,391.6	—27
Total	**$234.3**	**$12,490.3**	**$11,146.4**	**+12**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR indexes		Base Year = 100 1913	1926	1949
Constr. cost.	Sept.	586.08*	281.7*	122.86
	Aug.	583.69	280.58	122.36
Bldg. cost. .	Sept.	424.40*	229.42*	120.64*
	Aug.	422.36	228.32	120.06
Volume	Aug.	1,082	440	313

*Revised

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

Bids: October 23, 1952

Water Pumping Plant

LOW LIFT STRUCTURE
NORTHEAST STATION
FOR THE
DEPARTMENT OF WATER SUPPLY
CITY OF DETROIT, MICHIGAN
CONTRACT NO. NE-3

Sealed proposals for the construction of the Low Lift Structure for the Northeast Station, at 11000 East Eight Mile Road, will be received by the Board of Water Commissioners of the city of Detroit. Proposals shall be addressed to the Board of Water Commissioners, City of Detroit, Room 506 Water Building, 735 Randolph Street, Detroit 26, Michigan, and shall be endorsed "Proposal for Contract No. NE-3". Proposals will be received until 10:00 A.M. Eastern Standard Time, October 23, 1952, at which time they will be opened and read aloud in the Board Room, Fifth Floor, Water Board Building, 735 Randolph Street, Detroit 26, Michigan.

Included in the work is the completion of the construction of the substructure and the construction of the complete superstructure of the Low Lift Plant of the Northeast Station within and upon an existing foundation which was constructed as an open caisson. The existing caisson is of reinforced concrete construction, circular in plan, 94 feet in outside diameter with walls 8 feet thick, is approximately 110 feet in depth below Elevation 130 and rests on material classified as hardpan. The work within the existing caisson portion and in the complete substructure includes the construction of heavy reinforced concrete pump suction and discharge flumes, surge flumes, collecting channels, and fire-proof structural steel framing with concrete and steel grating floors. The superstructure is to be constructed circular in plan with an outside diameter of 104 feet (approximate), with a height of 55 feet (approximate), finished grade to top of coping, with structural steel rigid frames, reinforced concrete roof, masonry walls with limestone and granite facing and ceramic tile interior finish. The work also includes the furnishing and installation of a 20 ton bridge crane, an hydraulic hoist, passenger elevator, lighting, heating, ventilating, plumbing, sluice gates, miscellaneous large and small piping systems, large pump suction and discharge castings and fittings, some 54-inch diameter water main, and the installation of gate valves. The main pumping units and dewatering pumps will be furnished and installed under other contracts.

The Contract Documents, including the Notice to Bidders, the Forms of Proposal and Agreement, the Specifications, and the Contract Drawings may be examined during business hours, at the office of the Department of Water Supply, Room 706 Water Board Building, Detroit, Michigan. The Contract Documents may be obtained by making a deposit of Seventy-Five Dollars ($75.00) per set, which sum will be refunded upon the return of the complete Contract Documents in good condition within thirty (30) days after the bid date, or if used in making a bona fide proposal.

Each proposal shall be accompanied by a certified check or a satisfactory bidder's bond in an amount not less than five per cent (5%) of the total lump sum price bid, drawn payable to the City of Detroit, Board of Water Commissioners, as security for the acceptance of the Contract.

No proposal may be withdrawn for at least sixty (60) days after the scheduled closing time for receipt of bids.

The Board of Water Commissioners reserves the right to waive any informality in any bid and to accept any bid, or to reject any or all bids, should it deem it to be in the best interests of the City of Detroit so to do.

CITY OF DETROIT
BOARD OF WATER COMMISSIONERS
Oscar Wagner, President
George A. Shaffer, Vice President
Alfred J. Simpson
R. K. Williams
L. G. Lenhardt, Superintendent,
General Manager and Chief Engineer
E. H. Bauer, Acting Secretary

Bids: October 15, 1952

Construction of Substructure

OHIO TURNPIKE COMMISSION
361 East Broad Street
Columbus 15, Ohio

NOTICE TO BIDDERS

Sealed proposals will be received at the office of the Ohio Turnpike Commission at Columbus, Ohio, for bids on the construction of the substructure for a bridge to be built over the Cuyahoga River in Summit County, Ohio. Bidders will be required to furnish all labor, tools, materials, supplies, equipment, including floating equipment, machinery, vehicular transportation, and other facilities, utilities, and all things necessary or proper for, and to perform all work necessary or incidental to, the construction of the bridge substructure, complete in every respect, in strict accordance with the plans, specifications, and other contract documents.

The approximate quantities of the major construction items for the bridge substructure are as follows:

Dry and Wet Excavation	9,500 C. Y.
Steel Bearing Piles	35,000 L. F.
Concrete	20,000 C. Y.
Reinforcing Steel	813,000 Lbs.

Plans, specifications, and contract documents for the work to be performed are on file and may be inspected at the office of the Chief Engineer, Ohio Turnpike Commission, in Columbus, Ohio. A set of these papers may be purchased for the sum of $10.00, which sum is non-returnable.

All proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the contract documents.

Each proposal must be accompanied by a certified check on a solvent bank, payable to the order of the Ohio Turnpike Commission in an amount not less than 5% of the total amount bid in said proposal. Said certified check will be held by the Commission as a guarantee that, if the proposal is accepted, a contract will be entered into and the performance of the proposal will be secured.

All bids must be received on or before 10:00 o'clock A.M., E.S.T., Wednesday, October 15, 1952, in the offices of the Ohio Turnpike Commission, 361 East Broad Street, Columbus, Ohio, at which time they will be publicly opened and read.

The award of the contract, if it is awarded, will be to the lowest and best bidder whose proposal complies with all prescribed requirements. The Commission reserves the right to reject any and all proposals and to waive technicalities.

OHIO TURNPIKE COMMISSION
September 15, 1952

Bids: November 12, 1952

Bridge Over the Ohio River

ADVERTISEMENT FOR BIDS
AT LAWRENCEBURG, INDIANA

Sealed proposals will be received at the office of the chairman of the Indiana State Toll Bridge Commission in Room 302, Indiana State House, Indianapolis, Indiana, until 10:30 A.M., Central Standard Time, on the 12th day of November, 1952. Said proposals will then be immediately publicly opened and read.

Proposals are for furnishing the materials and constructing, complete, a vehicular bridge over the Ohio River at Lawrenceburg, Indiana. It is intended that the award will be made for Contract I, "Substructure"; Contract II, "Superstructure"; and Contract III, "Toll House and Office Building"; to one or more bidders separately or in any combination of two or more contracts.

The bridge, together with approach roads, will provide a connection between Indiana State Routes I and 48 and U. S. Route 50 in Indiana and Kentucky State Route 20. The approach roads are not a part of the work included in these contracts.

The bridge is being built to serve highway traffic only and is to have a concrete roadway of 24'-0" clear width with 2'-0" safety curbs. The main spans are through trusses of the three-span continuous tied-arch type, spanning openings of 412½ feet, 825 feet and 412½ feet, respectively. The Indiana approach consists of sixteen simple beam spans and three units of four-span continuous girders, making a total length of approximately 1,846 feet. The Kentucky approach is composed of one four-span continuous girder unit about 328 feet long. The total length of bridge, back to back of abutment backwalls, is approximately 3,835 feet.

All of the substructure units are of reinforced concrete construction. The Indiana approach substructure is supported on treated timber piles, except Bents 16, 17 and 28, which are on steel bearing piles. The main span piers are founded on rock, except Pier 29, which is supported on steel bearing piles driven to rock. The Kentucky approach bents are founded on rock Abutment 36 is on steel bearing piles driven to rock.

In addition to the bridge construction, a toll house and office building is to be constructed near the intersection of Duhme Street and Front Street in Lawrenceburg and a portion of the Lawrenceburg Flood Control District's existing collector drain will be relocated.

Construction will require the use of approximately 3,100 tons of structural carbon steel, 1,700 tons structural low-alloy steel, 20,500 cubic yards of concrete and 38,700 lineal feet of piling.

The Bureau of Public Roads, U. S. Department of Commerce, the claimant agency under the National Production Authority has advised the project meets the criteria of essentiality and is eligible for an allotment of controlled materials. Contractors requesting plans will be advised of the quarterly allocations as soon as this information is available. Steel sheet piling for temporary use will not be included in the allocation as it can be purchased or rented by the Contractor as equipment.

Proposals shall be submitted in sealed envelopes addressed to the Chairman of the Indiana State Toll Bridge Commission, Room 302, Indiana State House, Indianapolis, Indiana.

Copies of the plans, proposals and special provisions are on file at the following addresses:

1. Walter G. Koch, Chairman
   Indiana State Tool Bridge Commission
   c/o International Steel Corporation
   Evansville 7, Indiana.
2. Sverdrup & Parcel
   Consulting Engineers
   118 Syndicate Trust Bldg.
   St. Louis 1, Missouri
3. F. W. Dodge Corporation
   American Building
   30 East Central Parkway
   Cincinnati 2, Ohio
4. F. W. Dodge Corporation
   Architects & Builders Bldg.
   333 North Pennsylvania
   Indianapolis 4, Indiana
5. F. W. Dodge Corporation
   Vaughan Building
   300 West Main
   Louisville 2, Kentucky

These plans, proposals and special provisions will be furnished prospective bidders at the office of Sverdrup & Parcel, or copies will be forwarded upon receipt of request for same. In either case, the following charges will be made for these documents:

Substructure—Contract I	$15.00
Superstructure—Contract II	25.00
Toll House & Office Building—Contract III	5.00

Checks should be made payable to "Sverdrup & Parcel". No refunds or credit will be made for material returned.

Proposals must be made upon Standard Forms furnished by the Indiana State Toll Bridge Commission. Bidding proposals will be furnished not later than 9:30 A.M., Central Standard Time, on the day of the Letting.

The right is reserved to reject any or all bids, to advertise for new bids, to waive technicalities or to award on any bid that is most advantageous to the Commission.

INDIANA STATE TOLL BRIDGE COMN.
Walter G. Koch, Chairman
September 22, 1952.

OFFICIAL PROPOSALS

Bids: October 16, 1952.

Sept. 25, 1952

NOTICE FOR BIDDERS
CANAL IMPROVEMENT
STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY AND SUPPLY

Sealed proposals for the construction of the "Five-Mile Lock Control Structure" on the Delaware and Raritan Canal in Franklin Township, Somerset County, New Jersey, will be received by the Division of Water Policy and Supply at its office, Room 307, 520 East State Street, Trenton, N.J., until 2:00 p.m. (E.S.T.) Thursday, October 16, 1952, at which time and place the bids will be publicly opened and read.

The work includes the construction of bypass waterway, cofferdams and pumping, removal of existing timber headwall, wingwalls, and original timber wicket gate structure and operating machinery; constructing new reinforced concrete gate structure and wing walls; installation of three sluice gates, repair of old lock walls, repair of existing spillway; miscellaneous work, restoring site. Approximate quantities involved are: Foundation excavation 250 cu. yds.; rock excavation 100 cu. yds.; Concrete, (Class D) 125 cu. yds.; concrete (Class B) 210 cu. yds.; rip-rap slope protection 150 sq. yds.; reinforcing steel 10,000 lbs.; pneumatically applied mortar protection, 9,400 sq. ft.

Drawings, specifications, form of bid, contract and bond for the proposed work will be on file at the Canal Office of the Division, 342 Academy Street, Trenton, N.J., and may be inspected by prospective bidders during regular office hours. Plans will be furnished on the deposit of $10 for each set on application to the Canal Office.

Bids must be made on standard proposal forms and must be submitted in sealed envelope bearing the name and address of the bidder on the outside, marked "Proposal for Five-Mile Lock Control Structure", and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey in the amount of ten per cent of the bid submitted, and must be delivered at the above place on or before the time stated. Copies of standard proposal forms will be furnished on application. Prequalification of bidders will be required. The right is reserved to reject any or all bids. BY ORDER OF THE WATER POLICY AND SUPPLY COUNCIL, John Wyack, Secretary.

Bids: October 17, 1952

Road Work

NOTICE TO CONTRACTORS

Sealed proposals, addressed to
STATE OF MISSOURI, acting by and through
THE STATE HIGHWAY COMMISSION OF MISSOURI
Jefferson City, Missouri,

and endorsed "Proposal" for constructing (or improving) Route 54, Project F-97(10), Cole & Callaway County, will be received by the Commission until 10:00 o'clock A.M., on the 17th day of October, 1952, at the office of the Commission in the State Highway Building at Jefferson City, and at that time will be publicly opened and read.

The proposed work includes: Four pneumatic piers for a bridge across the Missouri River at Jefferson City, with the following principal quantities: concrete 16,160 Cu. Yd.; reinforcing steel, 521,560 Lb.

The time for completion of the work is August 1, 1953.

See Missouri Standard Specifications, Edition of 1950, for general specification and construction requirements.

Plans and specifications may be inspected in the offices of the Commission at Jefferson City, or the Division Engineer at Jefferson City, Missouri. Complete instructions to bidders and proposal blanks may be obtained at the Jefferson City office.

Proposals must be on forms provided. The right is reserved to reject any or all bids.

REX M. WHITTON,
Chief Engineer.

U. S. Government

St. Paul District, Corps of Engineers, US Army, 1217 U. S. Post Office & Custom House, St. Paul 1, Minnesota—Sealed bids will be received at this office until 2:00 P. M., C.S.T., September 30, 1952, and then publicly opened, for Removal of Sunken Barge, Mississippi River, near Alma, Wisconsin. Information on request.

OFFICIAL PROPOSALS

Bids: October 16, 1952.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, Albany, N. Y.,—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on October 16, 1952 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 2 LACY KETCHUM, District Engineer, 109 No. Genesee St., Utica, New York				
Montgomery	S.T. 52-23	Bullshead Road C.R. 23 & Pattersonville Rd. CR 20 Crossing the N.Y.S. Thwy.–Mohawk Section-Subd. 16 (So. Amsterdam By-Pass–Pattersonville)	0.69	Asp. Conc. Ty. 1A, Opt. Hy. Sep. 4 Sp. Alpha I-Beam 240' Hy. Sep. 4 Sp. Alpha I-Beam 201.83'	$20,000 Plans $15	$371,000
		DISTRICT No. 4 J. P. LARSEN, District Engineer, Barge Canal Terminal, Rochester, New York				
Genesee	FAC 52-14	Batavia City: Main St. & Oak Street Extension Proj. U-706(3); U-377(10)	0.78	Asp. Conc. Ty. 2A 3 Sp. Br. Alpha I-Beam 148'	40,000 Plans $15	692,000
Genesee & Monroe	S.T. 52-22 O.T. 52-14 R.C. 52-102	New York State Thruway–Ontario Section–Subdivision 5A, 5B, 6A, 6B, 7A West Bergen Road; Beulah Rd.; Palmer Rd.; Winslow Rd.; Wheatland Center Rd.; Union Street Rd.; Batavia–Bergen Pt. 1, SH 8179; Stafford-So. Byron-Byron Pt. 1, SH 1865; Le Roy-Brockport Pt. 3, SH 1730 Riga-Mumford, SH 1284; Scottsville-Chili, SH 5279;	1.04 Thwy. (4.48 Acc.)	9" Cem. Conc. Pavt. 2 @ 25' & 22' = 1.71 Mi. Asp. Conc. Ty. 1A, Opt. = 3.81 Mi. Hy. Sep. 4 Sp. Alpha I-Beam 237.67' Twin Br. I-Beam 46.2' Each Hy. Sep. 5 Sp. Alpha I-Beam 294.75' Hy. Sep. 4 Sp. Alpha I-Beam 223.92' Hy. Sep. 4 Sp. Alpha I-Beam 266' Hy. Sep. 4 Sp. Alpha I-Beam 207.03' Hy. Sep. 4 Sp. Alpha I-Beam 230.75' Hy. Sep. 4 Sp. Alpha I-Beam 224.75' Hy. Sep. Rig. Frame 31' Hy. Sep. 4 Sp. Alpha I-Beam 255' Hy. Sep. 4 Sp. Alpha I-Beam 226.47' Hy. Sep. 4 Sp. Alpha I-Beam 234.86'	200,000 Plans $100	3,400,000
Ontario	FAC 52-8P FAC 52-9 FAGC 52-10	Geneva City: Lake Front Arterial, Pts 1 & 1A Proj. U-UG-452(6)	0.98 (Acc. 0.14)	9" Cem. Conc. Pavt. 48'-58' Wide = 0.99 Mi. Asp. Conc. Ty. 1A, Opt. = 0.11 Mi. Misc. Work = 0.02 Mi. R.R. Sep. Alpha I-Beam 326.08' Hy. Sep. Rig. Frame Arch 70'	$75,000 Plans $25	1,370,000
		DISTRICT No. 6 H. F. BAUMM, District Engineer, State Office Building, Cornell, New York				
Schuyler	FARC 52-99	Watkins–Lodi, Pt. 3 S.H. 8035 Proj. F-626(4)	1.41	Asp. Conc. Ty. 1A, Opt. 22' Sp. R.C. Arch Br.	$35,000 Plans $15	613,000
		DISTRICT No. 8 J. S. BIXBY, District Engineer, Pleasant Valley Road, Poughkeepsie, New York				
Westchester	HT 52-3	N. Y. State Thruway–Hudson Section Sub. 9B (Hudson River Bridge)	0.92	Dredging Foundation Work (Including Caisson & Piles) & Misc. Work	725,000 Plans $25	13,208,000
		DISTRICT No. 10 J. J. DARCY, District Engineer, Montauk Highway, Babylon, Long Island, N. Y.				
Bronx	FACBE 52-1	Cross Bronx Expy. Cont. 9S, Proj. U-1084(16)	Exp. 0.65 (Acc. 1.72)	9" Cem. Conc. Pavt. 2 @ 36' & Var. = 0.95 Mi. Sheet Asp. Pavt. = 1.23 Mi. Misc. Work = 0.19 Mi. Hy. Sep. 2 Sp. Rig. Frame 99.67' Hy. Sep. 2 Sp. Rig. Frame 103'	$262,000 Plans $100	4,813,600
Bronx	FAMDE 52-5	Major Deegan Expressway (Contract 6) Proj. U-1082(12)	1.29 Exp. (0.28 Acc.)	Grading, Drainage & Misc. Work = 1.29 Mi. Sheet Asp. Pavt. = 0.12 Mi. Cem. Conc. Pavt. = 0.16 Mi. Hy Sep. Alpha I-Beam 119.69' Hy. Sep. Alpha I-Beam 98.55'	$415,000 Plans $100	7,520,000
Kings	FABQE 52-1	Brooklyn–Queens Exp. (Cont. 16) Proj. U-1066(9)	0.80	Demolition of Bldgs.	$30,000 Plans $10	510,000

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

OFFICIAL PROPOSALS

Bids: October 16, 1952

Overhead Steel Rolling Doors

THE PORT OF NEW YORK AUTHORITY
OVERHEAD STEEL ROLLING DOORS
LA GUARDIA AIRPORT, QUEENS, NEW YORK
CONTRACT O & M-158

Sealed proposals for furnishing all labor, material, and equipment to furnish and install overhead steel rolling doors at West Storage Garage, La Guardia Airport, Queens, New York, will be received at the office of the Director of Purchase of The Port of New York Authority, Room 1402, 111 8th Ave., New York 11, until 11:00 A.M. (E.S.T.) Thursday, October 16, 1952, at which time and place, bids will be publicly opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

The Port of New York Authority
Howard S. Cullman, Chairman
New York, New York

Bids: October 21, 1952

The Imperial-Compton Project

PUBLIC HOUSING
BID DATE POSTPONED
(Imperial-Compton Project, Cal 4-13)

The Housing Authority of the City of Los Angeles, California, has extended the bid opening date, for the Imperial-Compton Project, Cal 4-13, from October 7th, 1952, to OCTOBER 21, 1952, and will include in the proposal the construction of a Community Building and other additions to the scope of the work. Plans and Specifications for the Community Building are now available.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3808) will be received at Yuma, Arizona, until October 23, 1952, for furnishing labor and materials for earthwork, concrete lining, and structures for Wellton Canal, Station 618+25 to Station 1059+25; Lateral M-14.8, Station 0+68 to Station 17+66; and Unit 1, Wellton Distribution System; Wellton-Mohawk Division, Gila Project, Arizona. Location: 6 miles northeast of Wellton, Arizona. Principal items are: 500,000 cu.yds. excavation; 875 cu.yds. concrete in structures; 9,600 cu.yds. concrete in lining; 6,400 lin.ft. precast concrete pipe, 30 to 54 inches in diameter; 64,000 lbs. gates and other metalwork; and other work. Completion time 360 days. For particulars, address Bureau of Reclamation, Yuma, Arizona; or Building 53, Denver Federal Center, Denver, Colorado.

GOVERNMENT OF THE DISTRICT OF COLUMBIA, Director of Sanitary Engineering, D. C., September 19, 1952. Sealed proposals will be received in Room 429, District Building, 14th and E Streets, N. W., Washington 4, D. C., until 2:00 P. M., OCTOBER 16, 1952, EASTERN STANDARD TIME, and then publicly opened and read for Chlorination Plant, Structures and Equipment (Unit 20), Sewage Treatment Plant, Washington, D. C. This project will house equipment furnished by others, for Pre- and Post-chlorination in a Sewage Treatment Plant to serve 1,500,000 persons. Proposal Forms, Drawings and Specifications may be obtained from the Chief Clerk, Engineer Department, (Secretary, Contract Board, D. C.) Room 427, District Building, upon the deposit of a certified check made payable to the Collector of Taxes, D. C., in the amount of FIFTY DOLLARS ($50.00 for each set). (Telephone National 6000, Extension 2378.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3807) will be received at Escondido, California, until October 16, 1952, for furnishing labor and materials for: Steel siphon and structures, Second Pipe Line, San Luis Rey River Crossing, North Station 1901+60 to North Station 1968+15. Location: Near Fallbrook, California. Principal items are: Excavation and backfill 15,000 cu.yds.; 6,600 lin.ft. of 48-inch diameter plate steel pipe; and other work. Completion time 420 days. For particulars, address Bureau of Reclamation, Escondido, California; Building 53, Denver Federal Center, Denver, Colorado.

BIDS FOR REPLATING STEEL BARGES —Memphis District, Corps of Engineers, U. S. Army, P. O. Box 57, Memphis 1, Tenn. Sealed bids will be received until 11:00 a.m., C.S.T., 21 October 1952, and then publicly opened for replating ten steel material barges. Information on request.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3809) will be received at Grand Junction, Colorado, until October 16, 1952, for furnishing labor and materials for earthwork and structures for construction of Fire Mountain Canal Extension, Station 0+00 to Station 96+11.7, Paonia Project. Location: Near Hotchkiss, Colorado. Principal items are: 41,000 cu. yds. excavation for canal; 264,000 sta. yds. overhaul; 1,200 cu. yds. placing earth lining in canal; 100 cu. yds. concrete in structures; 3,200 lbs. furnishing and installing screw lift gates; and other work. Completion time 200 days. For particulars, address Bureau of Reclamation, Grand Junction, Colorado; or Building 53, Denver Federal Center, Denver, Colorado.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-3813) will be received at Denver, Colorado, until October 30, 1952, for furnishing one lot of structural steel for four railroad bridges for East Low Canal, Columbia Basin Project, Washington. Delivery is desired within 330 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-3805) will be received at Denver, Colorado, until October 28, 1952, for furnishing two vertical-shaft, 8,500-horsepower, 240-rpm hydraulic turbines; two vertical-shaft, 2,600 horsepower, 450-rpm hydraulic turbines; and, two vertical-shaft, centrifugal pumps each with 167 cfs capacity under a total head of 108 feet for Chandler Power and Pumping Plant, Yakima Project, Washington. Delivery is desired within 670 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado.

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(Continued on page 94)

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(Continued from page 93)

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These opportunities for engineers *in all fields* have been created by Lockheed's long-range production program – building planes for defense, planes for the world's airlines.

And remember this: When you join Lockheed, your way of life improves as well as your work.

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Send today for illustrated brochure describing life and work at Lockheed in Southern California. Use handy coupon at right.

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Mr. M. V. Mattson, Employment Mgr.
Dept. ENR-10

LOCKHEED
Aircraft Corporation
Burbank, California

Dear Sir:

Please send me your brochure describing life and work at Lockheed.

My Name

My Field of Engineering

My Street Address

My City and State

FOR SALE

Madsen 4000 lb. Asphalt Plant

This Plant Is In Excellent Condition

72" x 30' drier equipped with Hopkins Volcanic low pressure burner, dust collector, and power by Caterpillar Diesels. Two 10,000 gallon insulated hot oil tanks. Littleford 125 H.P. quick steam generator (new August, 1950).

Has produced only 50,000 Tons of material. This plant is in excellent condition, ready for work.

Price $65,000
F.O.B., Johnston, Pa.

S.J. GROVES AND SONS COMPANY

19 Rector St., New York, N. Y. *WHitehall 3-1055*

STEEL

75 tons 6" H 20# 40'
100 tons 8" H 31# 40'
75 tons 10" H 49# 40'

also

STANDARD AND WIDE FLANGE BEAMS, CHANNELS, ANGLES AND PLATES.

Your Inquiries Invited.

ALBRO STEEL COMPANY
47-29 VAN DAM STREET
LONG ISLAND CITY 1, N. Y.
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FOR SALE

CABLEWAY

1—25-ton—1700 ft. span, with 3-drum Lidgerwood hoist, Ward Leonard control—100 ft. steel fixed tower and 51 ft. traveling tower.

TRANSFORMERS

5 KVA— 25 KVA—37½ KVA
50 KVA—100 KVA—1000 KVA

MOTORS

12 Electric Motors, 2 HP to 50 HP, incl. 2—15 HP Gearmotors.

MG SET

40 KW complete with panel and controls.

FREQUENCY CHANGER

Westinghouse 50 KW changer with 40 HP motor.

OTHER EQUIPMENT

1—5-ton Bridge Crane, 20 ft. span.
1—Sand Drying Kiln, 43" I.D. x 14'. 1½ tons per hour
3—Pumps, 40, 60 & 75 HP.
4—Stopehammers, 2 tampers.
2—8-cy Concrete buckets, two compartment
1—Acetylene Generator, 100 CF per hour
25—Concrete vibrators: 20 two man, air; 5 one man, air.
1—Grace double drum sheepfoot roller.

MOUNT MORRIS DAM BUILDERS
Mt. Morris, N. Y.
Box 25 Ph. 298

FOR SALE OR RENTAL

1952 Link Belt 1 yd. self-propelled crane on Maxie Chassis.
1949 Northwest Model 25 self-propelled crane #11484 on Maxie Chassis.
Northwest Model 25 #11476 crane—dragline.
Northwest Model 25 #10528 crane—dragline.
General ¾ yd. #2534 Crane & Backhoe.
Galion Model 102 Power Grader.
International TD18 Bulldozer.
Caterpillar RD7 Angledozer.
1951 Caterpillar D4 #7U11606 Tractor with Traxcavator.
1951 Hydra Hammar, self propelled.
1951 Tri-line Concrete cutting saw with 14" diamond blades.
1950 CMC Model 11S Concrete Mixer.
1951 McKiernan-Terry Model 5 Pile Hammar.
Approximately 1800 l.f. MP-101 Steel Sheet Piling, 24 ft. lengths.
Approx. 3200 l.f. M-112 Steel Sheet Piling, 26 to 40 ft. lengths.
Approx. 2000 l.f. Armco 3 gage flange type Steel Sheet Piling, 20 ft. lengths.
A number of caterpillar tread wagons, Euclid rubber tired tractor wagons, Tractors with scrapers, 2" to 6" motor driven pumps, 105 to 315 c.f. Air compressors & misc. small equipment. Complete tunnel equipment for small tunnels, including 2500 l.f. of 10 gauge, 12 lb. rail tract with welded steel ties, steel tunnel cars & boxes, 1" to 2" pipe, electrical wiring, fixtures, etc.
Also available for sale or rental: 6 acre Yard with over 900 feet frontage on N.Y.C. Railroad and 40 x 60 Steel Shop Building in Inkster, Michigan, 2 blocks off Michigan Avenue.

DRAINAGE CONTRACTORS, INC.
22148 Michigan Ave. Dearborn, Mich.

PILE HAMMER

FOR SALE or RENT

New 50-C Vulcan Standard Base
New H Beam And Pipe Helmets

DAY & MADDOCK COMPANY
8201 Almira Ave. Cleveland, Ohio

Used Shovel Attachments

1—NORTHWEST Model 6
1—LORAIN Model 40.
Excellent Condition

HODGE & HAMMOND, INC.
720 Garrison Ave. N. Y. 59, N. Y.
PHONE: Kilpatrick 2-2400

FOR SALE OR RENT

Cat. D7 Bulldozer #4T5988
Cat. D7 Bulldozer #4T6542
Cat. D8 Tractor #8R8926
Cat. D8 Tractor #8R8933

WILLIAMS CONSTRUCTION CO.
Middle River, Maryland Phone: Essex 1310

LOCOMOTIVES

4—100 TON G.E. DIESEL ELEC.
1—65 TON G.E. DIESEL ELEC.
1—65 TON WHITCOMB DIESEL ELEC.
1—20 TON WHITCOMB GAS.

DARIEN CORP.
60 E. 42nd St. N. Y. 17, N. Y.

5—9FDT EUCLID BOTTOM DUMPS

13 cu. yd. capacity, Cummins Diesel Engines.

Machines are in excellent condition.

VILBRO EQUIPMENT CO., INC.
233 North Ave., Westfield, N. J.

HIGH PRESSURE PUMPS

2—A. Ch. 400 G.P.M., type ML, 6 stage, size 5 x 4, 1614 Ft. Hd.
1—Worth. 740 G.P.M., type WCS-2, 5", 2250 Ft. Hd.
1—Worth. 700 G.P.M., type UNS-1, 6 stage, 6", 1550 Ft. Hd.
2—I. R. 200 G.P.M., 2" 1375 Ft. Hd.
Pumps are mounted on bases, for motor or turbine drive.

We have about 200 various size cent. pumps on hand, turbine, motor, and gasoline driven. Send us your inquiries.

DALTON SUPPLY CO.
2829 Cedar St. Phila. 34, Pa.

MANITOWOCS #3500's Shovels — Cranes

Ser. #3665, 66, 67. 1947. Air control. Independent boom hoist. 36" x 18' Cats. Cap. 60 tons. Excellent. $32,000.00 as-shovels. Booms can be furnished additional. Location: Tennessee.

LIMA #802 Dragline

Ser. #2436. Dat. D-17000. 70 ft. boom, 3 cu. yd. bucket. Good. $21,000.00. Location:—Key West, Florida. Rental purchase: $2000.00 per month.—Also one K.C., Mo.

Wenzel Machinery Rental & Sales Co.
2136 Jefferson Street Kansas City, Mo.

PUMPCRETES

Rebuilt Current Models
For Sale or Rent
CONCRETE EQUIPMENT COMPANY
312 E. Wisconsin Ave.
Milwaukee 2, Wis.

TRADE WITH BAUER

BUY - SELL - TRADE
your
COMPRESSOR VACUUM PUMP STEAM BOOSTER
L.W.BAUER
265 ESSEX AVE BLOOMFIELD N.J.

At Auction

MARINE CONTRACTORS AND HANDLING EQUIPMENT
DIESEL GASOLINE AND ELECTRIC POWER UNITS

Sold by Order of

EASTERN SCRAP & SALVAGE CORPN.

270–23rd Street, Brooklyn, N. Y.

TUESDAY, OCTOBER 21, 1952, AT 10 A. M.

on the Premises

20 DIESEL ENGINES (from 65 to 1800 H.P.) by General Motors, Chicago, G. M. C., Fairbanks, Morse, Superior and Hercules. Large Stock of Diesel Engine Parts.
45 DIESEL AND OTHER GENERATORS (from 4 to 210 KVA) by Westinghouse, General Electric, Western Electric, Fairbanks Morse, American, Crocker Wheeler, Delco, Stamford and others.
16 GASOLINE ENGINES (300 to 800 H.P.) by Hall Scott, Wright and Sterling.
11 WELDING MACHINES (300 to 1000 AMP) and large stock Welding Electrodes.
18 NEW G. E. 1000 H.P. STEAM TURBINES.
18 PORTABLE AIR COMPRESSORS (from 105 to 500 C.F.M.) by Ingersoll Rand, Gardner Denver and Schramm.
3 SHEPHERD NILES 6-TON OVERHEAD ELECTRIC TRAVELING CRANES.
35 LIFT TRUCKS. 4 Baker Rauland and Clark 6000-lb. Gasoline Fork Lift Trucks, 6000-lb. Automatic Electric Platform Lift Truck, 30 Yale & Towne 3500-lb. Hand Operated Hydraulic Lift Trucks, 5 Y & T and other ¼ to 6 Ton Electric Hoists.
FORD, REO and OLIVER TRACTORS.
MACHINE TOOLS. Productomatic Miller, 2 Niles Punches, Power Radial Drill, General Engineering Multiple Riveter, Set Taylor Wilson Pinch Rolls, Crescent Inserter and Crimper, L & A Shear, Shutz O'Neill Pulverizer, Homestead Degreaser, Ingersoll Rand Drill Sharpener, Northfield Band Saw, Walker Turner 8" Saw Table, Multiplex 20" Radial Saw, Jig Saw, Drill Presses, Etc.
PAGE Diesel Driven Double Drum Hoist and CLYDE Gasoline Driven Double Drum Hoist.
CONTRACTORS EQUIPMENT. Caterpillar D-50 Diesel Tractor, Le Tourneau Tournapull, Le Tourneau Tournacrane, 13 Lidgerwood and other 4-cyl. Gasoline 5-Ton Stevedore 18-ft. Boom Cranes, 2 Bucyrus Erie Steam Pile Driving Cranes, Y & T Electric Self Propelled Crane, P & H Mack Truck Crane, Universal White Truck Crane, Wagon Drills, Portable Concrete Mixers, 6-Ton Road Roller, 8-Ton Locomotive, Locomotive Boiler, Pile Driving Hammer, Etc.
MISCELLANEOUS: 700 Electric Portable 180 Cycle Hand Drills, Screw Drivers and Nut Runners; 150 AC Motors to 75 H.P.; 1000 Thousand Watt Electric Light Bulbs, Quantities Electrical Equipment, Hoists, Pumps, Blowers, Rope, Cable, Shackles, Air Coolers, Condensers, Ejectors, 1000 Grindstones, 1400 Fencing Sets, 5000 Sanding Discs, 8000 Gas Mask Repair Kits, Lot Lubricants, 60 New Lubricating Pumps, 100 New A.C. Spark Plug Fuel Oil Filter Assemblies, 131 New Iron Fireman Wire Cutter and Pipe Bending Press Sets, Lot Aluminum Window Ledges and Steel Window Sash, 13,000 lbs. Stainless Steel in Coils and Strips, etc.

INSPECTION DAILY (EXCEPT SATURDAY) UNTIL SALE.

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1808-10 CHESTNUT STREET, PHILADELPHIA 3, PA.

80 Federal Street, Boston 10, Mass. • 50 Church Street, New York 7, N. Y.

FOR SALE

¾ yard CRAWLER CRANE

Koehring Model 301, 55 Ft. boom, ¾ yard bucket, Fairleads. Good Condition. Price $4,500.00.

H. LILES
10 Byron St. Lynbrook, New York
Lynbrook 9-7723

WANT TO BUY

3 AIR COMPRESSORS

3—2000 to 3000 Ft. Cap. or
6—1000 to 1500 Ft. Cap.

DARIEN CORP.
60 E. 42nd St. N. Y. 17, N. Y.

WANTED

1—USED ASPHALT PLANT

2000 lb. or 4000 lb.

State Condition, Age, Make, Location, Etc.

W-5286, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED

Dragline 4 to 10 yard
Shovel 4 to 6 yard
Diesel Electric Locomotive
Shovel ¾ to 1½ yard

state boom length & bucket size condition — location — price

W-5530 Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED

Northwest 80-D or Bucyrus-Erie 54-B Shovel
Northwest 6 or Bucyrus-Erie 38-B shovel
Crawler-Cranes with independent boom hoist
20 Ton Truck Crane
Euclid Rear Dump Trucks
Caterpillar Dozer D-7 D-8 & D-6

W-5531 Engineering News-Record
330 W. 42 St., New York 36, N. Y.

GM SERIES 71 DIESEL PARTS

LINER KITS — LINERS
PISTONS — RINGS — PINS
MAIN and CONN. BEARINGS — EXHAUST VALVES
INSERTS — GASKET SETS
LO and FO ELEMENTS

Prices on Request

W. R. BLACKBURN & CO.
149G BROADWAY
NEW YORK 6, N. Y.

6—New Surplus 20,000 Gal. Cap.
5/16 in. thick 10' 6" x 31' Steel Tanks

2 at Springfield, Mo. 4 at Newark, N. J.

L. M. STANHOPE
ROSEMONT, PA.

EARTH DRILL FOR SALE

Buda Model HBD—drills 13" to 24" holes up to 22' deep, gas engine, mounts on truck or skids. First Class Condition—$2,500.00.

List & Weatherly Construction Co.
231 W. 47 St. Kansas City 2, Mo.

RARE OPPORTUNITY

USED U. S. ARMY
5 GALLON

JEEP CANS

FOR ONLY $1. EACH
MINIMUM ORDER
5 CANS FOR $5.00
F.O.B. PHILA.

A sturdy storage can for gasoline, oil or water for equipment on the job. Has wide mouth opening and screw cap.

15" FLEXIBLE SPOUT

WITH BREATHER TUBE, SNAPS ON JEEP CANS
5 FOR $2.00
F.O.B. PHILA.

Rated Firms Open Account—Others Send Check

J. JACOB SHANNON & CO.
214 N. 22nd St., Phila. 3, Pa.
The Oldest Equip. House in Phila.

FOR SALE

750'X18' TIMBER TRESTLE

12 x 12 Stringers (28') and Caps (18') #1 Struc. Fir;
4 x 10 and 4 x 12 Hard Pine Bracing;
3" Hard Pine Deck planking
Bents 14' on centers
Totals 181MBF of timber
PILES—18,364 l.f. Southern Pine to 75' all steel pointed and will be in perfect condition when pulled.
Complete Trestle now in service @ Lake Champlain between Alburg-North Hero, Vermont.
Owner will dismantle and have available in Fall of 1952.

AVAILABLE IMMEDIATELY
Southern Pine Piles 12/80', 6/75', & 2/65'.

Contact—MUNROE-LANGSTROTH, INC.
NORWOOD, MASS.

Don't buy trouble . . .

Buy McCoy

Caterpillar Dealer

DEPENDABLE

USED EQUIPMENT

Largest Inventory in Rocky Mountain Empire. One of the West's most modern and complete equipment repair shops.

All Items are Below Present Ceiling Prices

1—Cat Diesel D8 Tractor, 2U series equipped with new Trackson Pipelayer. Tractor completely rebuilt including new running gear. Carries new tractor guarantee.

1—Bucyrus Erie Model 54-B combination shovel and dragline equipped with shovel front, complete with 70' of crane boom. 4 cu. yd. Hendricks Model LS dragline bucket; powered by Buda diesel engine. Excellent condition.

10—Cat DW10 Tractors and W10 bottom dump wagons. All in good working condition. Priced to sell.

1—Euclid Loader with 54" carrier powered with Cummins NHS110 Diesel engine. Very good condition.

1—Cat Diesel D8 Tractor—8R series, and new Cat 25 CCU and angledozer. Tractor completely rebuilt. Carries new guarantee.

2—Cat DW20 Tractors and W20 Bottom Dump wagons. These units used as demonstrators—less than 500 hours. New guarantee.

1—Osgood Model 200 combination shovel and dragline powered by GMC Diesel engine. Shovel completely rebuilt and in excellent condition.

1—Koering Model 401 Dragline powered by Cat Diesel D8800 engine. Rebuilt and guaranteed.

McCOY CO.

6000 Colorado Blvd., Denver

Phone AComa 3751

FOR SALE

Allis-Chalmers Turbo Unit

TURBINE: 6000 KW, 3600 r.p.m., 200/225 lbs. I.S.P., 550° F.T.T., 2.5" Abs., Condensing.
GENERATOR: 6000 KW, 3600 r.p.m., 7500 KVA, 80% p.f., 3 phase, 60 cycle, 2300 volt.
EXCITER: 50 KW Turbo Unit, 125 volt, complete operating panel.
CONDENSER: Surface Type, 2 pass, complete with circulating, condensate and air removal pumps.
Complete with auxiliaries

General Electric Turbo Unit

TURBINE: No. 27834, FORM GG, 3000 KW, Speed 3600, Steam Press, 200 lbs. 490° F.T.T., Exhaust Press. 2.5" Abs.
GENERATOR: A.C., No. 2006062, Type ATB-2, 3750 KVA, 3600 r.p.m. Form T, Amp 3600, Speed 3600, 60 Cycle, 600 Volts, 80% P.F.
CONDENSER: Alberger Surface, Size 10C, No. 11626.
Complete with auxiliaries.

General Electric Turbo Unit

TURBINE: No. 28179, Form B, 1000 KW, 3600 r.p.m., 3 Stage, 195 lbs. Steam Pressure, 2.5" Abs.
GENERATOR: A.C., No. 4218999, Type ATB-2, 1250 KVA, 3600 r.p.m., Form H.T., 600 volts, Amps. ARM. 1203, 60 Cycle, 80% P.F., 3 Phase.
CONDENSER: Elliott-Ehrhart Surface type, 2650 sq. ft.
Complete with auxiliaries.
All above F.O.B. Foundations, South Carolina. Dealers will be protected.

THE SPRINGS COTTON MILLS

Department E — Lancaster, South Carolina

DEPENDABLE USED MACHINES

SPECIAL—Model 25 Bay City ½ yd. backhoe rebuilt in our shop. Come see it!

P&H ½ yd. crane	Quickway shovel on ½ track	3 yd. Dumpcrete
Hanson truck crane	Silent Hoist Krane Krawler	20" belt tripper
Lorain 40 shovel	20"x40' port. belt conveyor	Gallon motor grader
Lessmann loader	Morris 10" manganese pump	Pioneer 4x8 screen
Butler Carscoon	Cedar Rapids 15x36 crusher	Eagle cinder crusher

FOR RENT—Cranes, draglines, backhoes, buckets, and all other accessories.

10002 Southwest Highway — **TRACTOR & EQUIPMENT CO.** — Oak Lawn, Ill.

For Sale

STEEL FRAME BUILDINGS

42' x 140'. Entire roof system. Gable roof with monitor. Columns can be furnished.

26' x 34' x 16' high clearance. Gable roof.

22' x 28' x 40' high. Flat roof

Also large supply of 7" channels, 15" I-Beams, 1½" x 1½" x 3/16" angles and other steel members.

Inspect prior to dismantlement

CUYAHOGA WRECKING CO.

12645 Greenfield — Detroit 27, Michigan
Phone VErmont 8-1055

FOR SALE

10" SUCTION DREDGE

40' x 12' Steel Boat
10" Amsco Pump
V-Rope Drive Powered by 2—120 HP Cummins Deisels in Tandem
12" x 25' Suction
100'—10" Pipe
8—Pipe Pontoons
Motors in good condition.
Parts to make practically new pump.
Dredge used in sand deposit located on railroad near Cowles, Nebr.

Sale Price—$10,000

Contact

G. C. McBRIDE CO.

P. O. Box 500 — Brownwood, Texas
Phone 5955

BROWNING 1947

Reconditioned and Guaranteed

Model T-15
15 Ton Motor Crane
Immediate Delivery

EDWARD EHRBAR, INC.

29 Meserole Ave. — Bklyn 22, N. Y.

FOR SALE

Byers 83 Combination Shovel, Trenchoe and Crane

Buckeye 70 35' Boom

Michigan C16 Trenchoe

Quick Way Model E Crane or Hoe

Lima 1201 Shovel and Dragline

CASEY & EMMERT, INC.

1426 W. Ohio St. — Chicago 22, Ill.
Haymarket 1-6464

Sealed bids will be received by the Mayor and Members of the Common Council at 5:00 P.M., Wednesday, October 22, 1952 for the following:

Item 1—
Superstructure for steel building consisting of
16 trusses 92 feet long
32 columns 6¾" x 12" x 16 ft.
Roof purlins
Bracing for trusses

Item 2—
Half trusses for Leanto
Corrugated side paneling
Corrugated roof decking

Items may be bid separately or together. Steel may be inspected by contacting City Attorney, Salvatore J. Leombruno, City Hall, Glens Falls, N. Y., Steel to be sold *AS IS, WHEREIS.*

A certified check for ten percent of the purchase price to be included with the bid. No bidder may withdraw his bid within 15 days after actual date of the opening thereof.

The Council reserves the right to reject any and all bids.

KATHERYN V. FITZGERALD
City Clerk
Glens Falls, N. Y.

2 INGERSOLL-RAND AIR COMPRESSORS

With oil engine, Type PO, 55 H.P. size 15, class Vs. Located New York State.

FS-5489 Engineering News-Record
330 W. 42 St., New York 36, N. Y.

Marion 111-M diesel 3½-yd. shovels (2).
Locomotives, 7 to 80 tons, diesel, gas (12).
Shovels, draglines, cranes, 1½ to 12 yds.
Bucyrus 120B 4½-yd. shovel, 25 cycle, elec.
Gyratory crushers, 25A Telsmith; 27", 30".
Nordberg-G.E. diesel-elec. generator, 875 KW.
Walking draglines, 15W, 9W, 3T, diesel, elec.
Floating derricks, 30 and 15 tons, steam.
Trenchers, Parsons 25, 310, Buckeye 224, 120.
B-E 2-1/3 yd. shovel front attach., 52B-55B.

H. Y. SMITH CO.
828 N. Broadway — Milwaukee 2, Wis.

For Sale

CRAWLER CRANE

Industrial Brownhoist, Type BC, Gasoline, 25 Ton Capacity, 90 foot Boom, 11 years old, Good Condition.

S. T. DVORAK
401 N. Broad Street, Phila 8, Pa.
Tel Walnut 2-4328

FOR SALE

New

Byers ¾ cu. yd.

SHOVEL

or

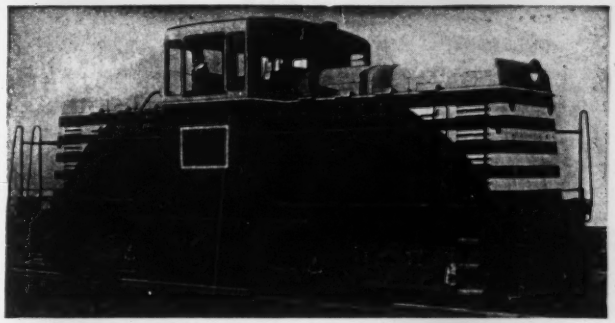
50' Clam Boom

$15,000

CAPITOL EQUIPMENT, INC.

Troy, N. Y.

Tel. ADams 8-3314



FOR SALE G.E. DIESEL ELECTRIC 44-Ton LOCOMOTIVE

Standard Gauge **Excellent Condition**

Write for Details

FRANK M. JUDGE & CO., Inc.

7010 Empire State Bldg. New York 1, N. Y.

FOR SALE

25-TON TRUCK CRANE

1—Link Belt Truck Crane, Model HC90, equipped with lowering clutch on load drum; high retractable gantry; independent rapid boom hoist; independent operation on all operations; 90 ft. main boom manufactured of alloy steel cord members; hinged and pin connected for folding; 30 ft. sectional jib manufactured of alloy steel cord members. Serial No. 7AT 1155. Placed in rental service in March of 1949.

This crane has only been used as a lifting crane and is in excellent condition and is guaranteed to give satisfactory service.

Price R & G—$30,000.

United Hoisting Co., Inc.

13 W. Sheffield Ave., Englewood, N. J.

FOR SALE

REX MOTO MIXERS

NEW—NOT USED *IMMEDIATE DELIVERY*

5—8 CUBIC YARD CAPACITY MOTO MIXER (NO CHASSIS)
AGC RATING — 8 YD. MIXER, 10½ YD. AGITATOR
316 GALLON MIXING TANK—40 GALLON FLUSHING TANK.
CHRYSLER ENGINE FLUID COUPLING DRIVE.

EDWARD EHRBAR, INC.

29 MESEROLE AVE. EVergreen 3-5000
BROOKLYN, N. Y. C. B. De LEON

For Sale

STEEL PANEL FORMS

Blaw-Knox—Cantilever Type

260 Lin. Ft. — Upstream Forms
150 Lin. Ft. — Downstream Forms
Straight, for 10 on 7½ slope
940 Lin. Ft. — Bulkhead Forms
Quantity of 1¼" Anchor Bolts and ⅝" she-bolts
Above forms for 5-ft. lifts

MOUNT MORRIS DAM BUILDERS

Box 25 Mount Morris, New York Ph 298

FOR SALE

New Wire Rope Blocks

12" Snatch Blocks with Hooks	$13.50
14" Snatch Blocks with Hooks	18.50
16" Safety Snatch Blocks with Shackles	20.00
14" Double Blocks with Shackles	13.00
18" Single 20 Ton with S. Shackle	25.00
18" 3-Sheave 30 Ton with Shackle	50.00
18" 4-Sheave 30 Ton with Shackle	75.00
#32 Drop Forge Hooks, New	2.00

ABERTHAW COMPANY

133 Southampton St. Boston 18, Mass.

HEAVY DUTY

DUMP TRUCKS

Model DC100 Autocars

Year—Five 1950, Five 1951
Engine—HRBB Cummins Diesel
Transmission—5 SPD. with 3 SPD. auxiliary
Rear—Timken Tandem #S.F.D. 460
Tires—11.00 x 24—14 Ply lugs (Good to new)
Double frame
Cabs—Coupe (clean)
Brakes—Air, 12 cu. ft. (Hand control valve to rear wheels as parking brake)
Body—10 Yd. Heil, 4 yd. sideboards, cab protector
Hoist—Heil #2824DA60° (Power up and down)
Heater and defroster, F.W.L. Valve, air horn
Directional signals

These units are "clean" all in good operating condition and are priced F.O.B. Paterson, N. J.

1950 Models . @ $ 9,500.00 Each
1951 Models . @ 11,000.00 Each

PATERSON MACK DISTRIBUTORS, Inc.

Route #6 East Paterson, N. J.

Used EUCLIDS for Sale

13-Yard Bottom Dump
22-Yard End Dump
Attractive prices

FEHRS TRACTOR & EQUIPMENT CO.
1809 Cuming Street, Omaha, Nebraska
Telephone—Atlantic 3127

1—New #1 Cedarapids Kubit Impact Breaker

Serial No. 14008.
Price f.o.b. Detroit, Michigan $2,889.56

MICHIGAN TRACTOR & MACHINERY CO.
13801 Lyndon Ave. Detroit 27, Mich.

5 HOISTING ENGINES

1—A.H.&D. 2 DRUM 60 H.P. ELEC.
1—A.H.&D. 3 DRUM 75 H.P. GAS
1—A.H.&D. 3 DRUM 109 H.P. GAS
2—THOMAS 3 DRUM 100 H.P. ELEC.

J. C. SEALY

60 E. 42nd St. N. Y. 17, N. Y.

28 SURPLUS NEW BELT CONVEYORS

30 INCH	1-136'-	1-270'	- 2-350'	- 1-418'
	2-500'-	1-1100'	&- 2-1500'	Long.
36 INCH	1-160'-	2-250'	- 1-320'	- 1-400'
	1-590'-	2-1000'	- 1-1600'	Long.
42 INCH	1-144'-	1-290'	- 1-377'	- 1-575'
	2-700'-	1-800'	- 2-1500'	Long.

DARIEN, 60 E. 42nd St., N.Y.17, N.Y.

FOR SALE

New Material—Immediate delivery from stock

3 x 3 x ¼ up to and including 6 x 6 x ¾ Angles
4" up to and including 15" Channels
4" I Beams up to and including 36" WF Beams
3/16" up to and including 2½" Plate
H Beams and Pile Sections
Also all sizes Excellent Used Material

Phone or Wire your steel requirements

HY DRACHMAN STEEL CORP.

Warehouse
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1—LINK BELT 1½ YD SHOVEL
1—P&H ¾ YD SHOVEL
(Used in Gravel Bank)
Excellent Condition
CALLAN CONSTRUCTION CORP.
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FOR SALE
Northwest model 80D Shovel
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Bucyrus-Erie model 22B shovel
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FS-5348, Engineering News-Record
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3 ADNUN PAVERS
Converted to stone spreaders; spread to 12';
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STONE SPREADER
1 MENTES WILLIAMS to fit CATERPILLAR D-8;
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1 LIMA 604 1½ c. y. Rud-O-Matic tagline; 60' boom;
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FOR SALE OR RENT:
One (1) 45 ton Lorain Truck Crane
500 lineal ft. narrow gauge rail
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All sizes and weights. Also frogs, switches, spikes, bolts, tie plates, contractors' and mine equipment carried in stock.
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New Model 3500 Speederane, dragline, clamshell and lifterane, 60-ton capacity.
New Ingersoll Rand 600' Gyro-Flo Air Compressor.
New Lorain Truck Crane, 25 Ton capacity.

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Marion 392 and Koehring 803 dragline, clamshell, lift crane and pile driver combinations.
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SUPER-C-TOURNADOZER
WITH BUDA ENGINE
Worked: 1460 Hours, Available—Oct. 15
A. S. WIKSTROM, INC
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Reconditioned and Guaranteed
Model 255A
¾ yd. Crawler Shovel
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AMERICAN CRANE

Steam, 50 ton revolver, 80' gantry, one year minimum.

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YOUR BEST CONNECTION

★ PIPING—For all purposes *and for Culverts* 7" to 26".
★ All Sizes; fabricated to your specs.
★ New and Used.
★ Will Ship C.L. and L.C.L., Quantities.
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Specialty large sizes.
Cutting — Threading — Flanging — Fittings — Valves.

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and use this section as a buying reference. Keep your advertisement on this page if you can supply them.

FOR SALE—*Immediate Delivery*

C. I. Water Pipe — A.W.W.A. Standard
BELL & SPIGOT—10 inch, 12 inch, 16 inch, 20 inch, 24 inch and other sizes
FLANGED PIPE—4 inch, 6 inch, 8 inch, 10 inch, 12 inch

C.I. Water Pipe Fittings—Bell & Spigot—and Flanged—All kinds and sizes
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111 Front Street — Hempstead, L. I., N. Y.
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PIPE FOR SALE

24" d. Corrugated Galvanized in 30' lengths—approximately 5500'. Used once for Ventilation Duct in 12' d. Tunnel — REASONABLE & stored in Cleveland, Ohio.

Contact: THE KALILL CO.
4161 W. 150th St., Cleveland 11, Ohio
Phone: CL-1-3848

Fluid torque drive put on Unit rigs

The ½-yd crawlers and other mobile machines made by Unit Crane & Shovel Corp. will sport Fluid Torque Drive as a standard installation from now on. It's one more step in the increasing use of torque converters for heavy construction machinery, resulting in elimination of shock loads that in turn adds life to bearings, shafts, gears and cables. Unit offers the Chrysler 12½-in. torque converter at no extra cost on machines equipped with 6-cyl Chrysler Industrial gasoline engines.

Straight-in-line mounting is still retained. By this method the engine is mounted longitudinally on the turntable so that the output or power takeoff shaft is directly in line with the input shaft of the main machinery gearing. The first reduction is a worm and worm gear which connect through a roller-chain-type flexible coupling to the torque converter. The straight-in-line mounting, in combination with the worm gear, greatly simplifies the problem of adapting engines of various makes and speeds to the company's machines and is particularly advantageous in the case of the torque converter.

The engine clutch (and its related lever system) has been eliminated. In conventionally-driven machines this is located between the engine and gear case and is required as a disconnect clutch because of rigid mechanical drive. There being no such mechanical connection between the engine and main machinery input shaft when a torque converter is used, the company engineers saw no need for it.

In addition to elimination of shock loads, the company claims that fluid torque drive builds up line pull without excessive load, gives smoother control of all operations, provides steady power for peak loads without stalling, increases lugging power for hard excavating and provides for regulated load handling by throttle control.

The machines have been thoroughly field-tested in operations for shovel, clamshell, dragline, backhoe, etc. Unit Crane and Shovel Corp., 6411 W. Burnham St., Milwaukee 14, Wisconsin.

Engine-generator set designed for contractors

A contractor's model of engine-generator set, the Model 4500, has been designed by the Wincharger Corporation for full output at 115 volts, 60 cycles, ac. It has motor starting capacity of 4,500 watts—sufficient to start and run motors up to 1½ hp. The unit has 3,000 watts intermittent rating; 2,500 watts continuous rating. It is said to operate easily portable tools such as chain saws, masonry saws, vibrators, lights, etc.

Available with either standard tubular cradle base or portable base attachment (consisting of a single handle and semi-pneumatic rubber tired wheels), the unit is designed for use with either a Briggs & Stratton No. 23 or Wisconsin AEN 4-cycle engine. The universal mounting base permits sale of the unit with or without engine. Wincharger Corporation, East 7th and Division Streets, Sioux City 2, Iowa.

Torch removes defects in castings or forgings

The new "Arcair" torch operates with an ordinary dc welding machine and a compressed air line. It removes defects in castings or forgings; cleans the root of welds; removes welds; and grooves, cuts, or bevels mild steel, stainless steel, hard alloys, brass, bronze, monel and cast iron.

No gas cylinders or regulators are necessary with this new type of torch. Air and current are brought to the torch through a concentric cable permitting great flexibility and ease of handling, according to the manufacturer. It can be used anywhere it is possible to weld, and operates in spaces that are often too restricted to accommodate a chipping hammer or oxy-acetylene gouging torch.

Many alloy parts, such as manganese steel inserts, are welded into the equipment with stainless steel welds. This process gouges out stainless steel as readily as mild steel, and is most effective in removing these welds for replacement of worn parts. Since it works equally well on manganese steel itself, it can also be used for repairing cracks in that material. Arcair Company, 2614 Burwell Street, Bremerton, Washington.

4-post tracing table has fluorescent reflector

Anyone who's worked or drawn on a sheet of plate glass needn't be convinced of its smoothness. Stacor has gone one further and sandblasted the underside of their glass working surface to diffuse light from a fluorescent tube that's installed under the glass. Details show up clearly, being lighted from the back of a drawing or blueprint and tracing is infinitely easier and surer. Adjusting devices can raise or lower the tracing surface. Two tracing surface sizes are available; 20 x 25 in. and 24 x 36 in. with 20 watt and 30 watt fluorescent lamps respectively. Stacor Equipment Company, 473 Troy Avenue, Brooklyn 3, New York.

(*Products continued on page 104*)

ROOTS & DOZES

IN THE SAME PASS...

ESCO introduces NEW BUCK FORTE ROOTER

Model view. Four adjustable rooting depths: 9", 15", 21" and 27".

REMEMBER the name—Buck Forte Rooter—especially designed to root and doze on the same pass. This dual feature of operation has enabled operators, working with a pair of Buck Forte Rooters, to up their dozer yardage over 50%. *That's a job-proven fact.*

It gives you these advantages:

LIGHT IN WEIGHT. Less than 1,000 lbs. No special handling equipment required. Can be transported on the tractor.

LOW COST. The Buck Forte Rooter costs 75% less than conventional rooters.

TOUGH AND DEPENDABLE. Equipped with *ESCO* alloy steel shank and renewable box type points, it has proved itself in concrete, rock and hardpan.

EASILY INSTALLED. One man can install or remove the rooter in minutes with no cutting or welding on dozer.

ADJUSTABLE. Four adjustable rooting depths—9", 15", 21" and 27".

FITS ALL LARGE, STRAIGHT DOZERS. Can be used in pairs or singly.

Get more information on the new Buck Forte Rooter—Just see your ESCO dealer or fill in and mail the coupon.

Rooter mounted on dozer blade. Second rooter is usually installed to double effectiveness.

Buck Forte Rooter on a straight dozer rooting unshot sedimentary ocean rock for aggregate plant.

ESCO DRAGLINE BUCKETS, DIPPERS AND HOE DIPPERS

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Whether it's

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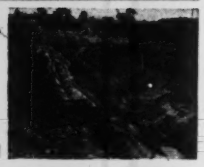
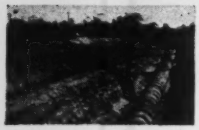


BUILDINGS

SEWERAGE

or any other type of wet work



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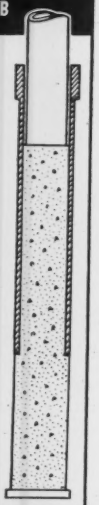
COMPRESSED CONCRETE PILES SUPPORT THE BROOKLYN UNION GAS CO. PLANT



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THE MAC ARTHUR METHOD

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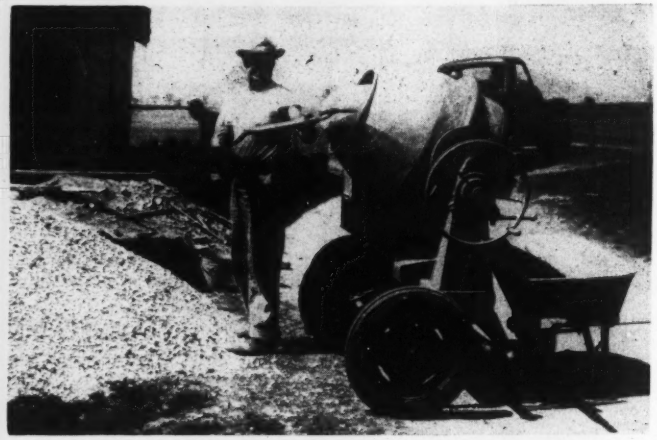
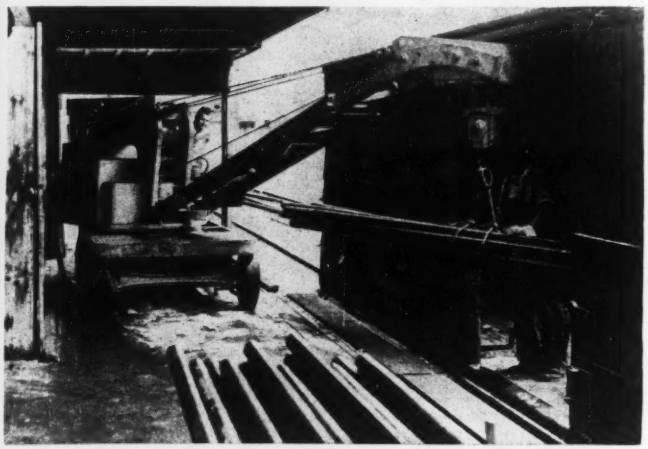
New Orleans • Cincinnati • Boston



Maintenance is simple on new mixer

In designing their new 3½-S Dandie mixer, Kwik-Mix Co. had maintenance in mind. Accordingly, there are high-pressure automotive-type fittings on anti-friction bearings on drum, drive shaft and wheels. Only five Alemite fittings need weekly servicing, according to the manufacturer, and multiple V-belts for power transmission can be replaced quickly and easily. The engine house cover comes off as a unit for starting, checking and servicing convenience.

The new mixer is an end-discharge, tilting type and complies with AGC specifications for 3½ feet of mixed material plus 10%. A tilting device can hold the drum in any position and a push-down toe pole balances the machine for easy, one-man spotting, hitching or moving. KWIK-MIX CO. PORT WASHINGTON, WISCONSIN.

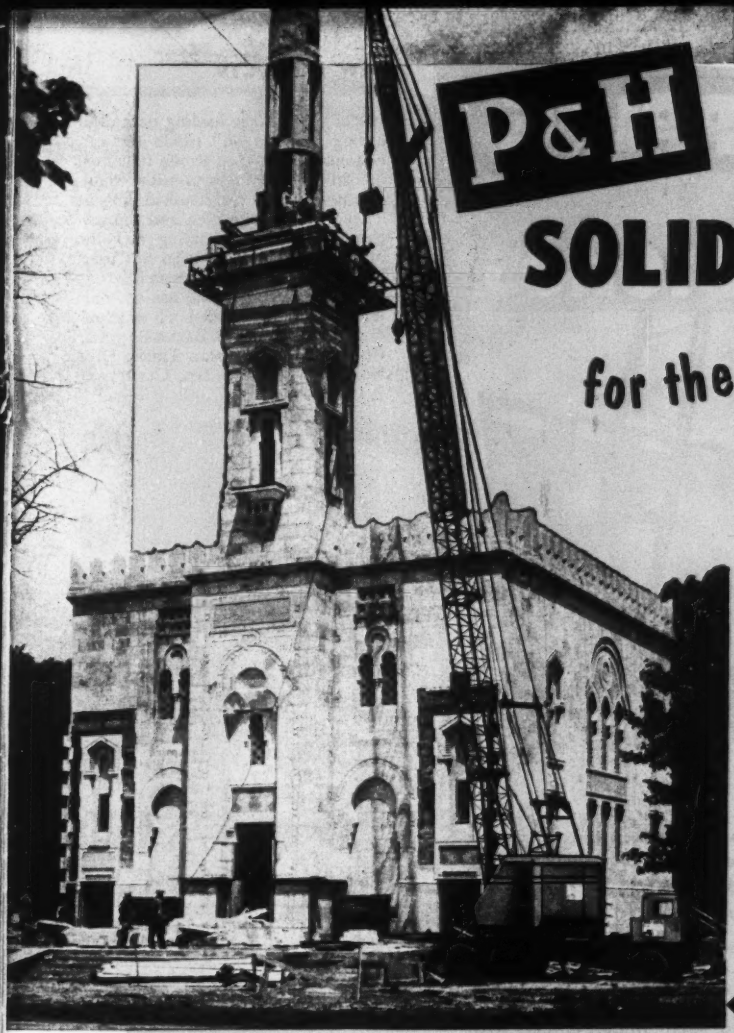


Crane-truck can work in limited space

Car unloading problems of National Acme Co. in Cleveland are no different than those of countless other companies; the difference is that they have found a solution. They've often had to unload 20-ft lengths of tube steel stock from boxcars with 6-ft door openings and on a platform with only 10-ft headroom.

They use a Baker-Raulang crane-truck that snakes a bundled load of steel through the boxcar door at an angle while a laborer guides it to the

(*Continued on page* 106)



P&H TRUCK CRANES

SOLID FOOTING

for the Tip-Toe Reach!

Greater Stability is no idle boast with P&H Truck Cranes. Size for size, around the full 360° of operation, no P&H Truck Crane has ever been outlifted. This ability to put more on the hook means extra safety, extra capacity, extra profit for you. Add to that the smooth hydraulic control that lets you place loads precisely where you want them — dual power suited exactly to the tasks of travel and work — and you have the reasons why contractors are showing a marked preference for P&H. Better double-check now. Ask for literature.

P&H Truck Cranes are also available with remote control.

P&H Model 255A Truck Crane hoists a 2½ ton block, with 90 foot boom and 30 foot jib. This mosque, in Washington, D.C., is the first ever built in the U.S.

P&H TRUCK CRANES

HARNISCHFEGER CORPORATION

4400 WEST NATIONAL AVENUE • MILWAUKEE 46, WISCONSIN

SEE YOUR P&H DEALER

Look to P&H for the most modern features in Power Shovel and Truck Crane construction. There's all-welded design, live roller circle, triple-safe boom hoist, hydraulic control, plus a low center of gravity that provides a higher ratio of lifting capacity to gross weight. This means more WORKABILITY . . . BETTER PERFORMANCE . . . GREATER SAFETY. Write for literature on the size you need.

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POWER SHOVELS • CRAWLER AND TRUCK CRANES • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • DIESEL ENGINES • PRE-FABRICATED HOMES

RIP-RAPPING with 32 Ton Stones

*Morrison-Knudsen Co.
Contractors—Boise, Idaho

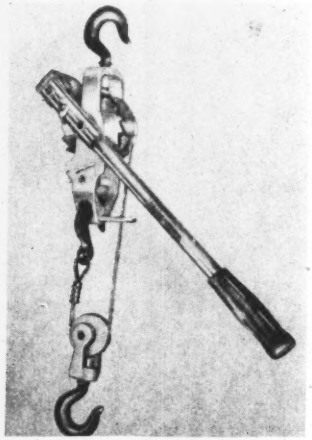
An *exclusive* Owen Grapple feature contributed greatly to the speed, safety and success in placing thousands of tons of rip-rap to protect the down stream banks at Grand Coulee Dam.

The granite stones varied from 12 tons to 32 tons and no two were similar in shape.

Because of its Patented independent tine action the Owen Grapple alone could grasp such difficult objects with pressure exerted equally through all 4 tines regardless of the irreggular shapes of the stones.

If you use grapples, investigate this exclusive Owen feature which speeds operations, increases safety and lowers per ton handling costs.

proper spot on the loading deck after having "hooked on" inside the car. National says it used to use four men on this job heretofore—with countless possibilities for smashed fingers. They now use two men and the machine—one man operating and the other guiding—and it takes less time. The rig is said to cut man-hour requirements by 60% and has not only lessened, but precluded all smashed-finger accidents. THE BAKER-RAULANG CO., BAKER INDUSTRIAL TRUCK DIVISION, 1230 W. 80th ST., CLEVELAND 2, OHIO.



Portable winch-hoist

The new Lug-All 1½-ton alloy winch-hoist, built for the rugged requirements of heavy construction and the utilities, offers many new and useful features. It has a 30-to-1 power ratio and has been tested to 100 per cent overload. Weight is only 8½ lb and features include top-grade preformed flexible aircraft cable, stainless steel fittings and springs and permanently-oiled bearings. The handle is reversible and can be readly removed if a rigging must be left overnight.

A combination of three swivel hooks and a built-in pulley block allow work to be done around corners. It can be operated in any position and can be set for forward, reverse or free wheeling. Cable length is 10 ft, but any extension length is optional.

Some of the many uses to which Lug-Alls have been put are: Moving machinery, lifting or skidding engines, repairing conveyor belts, lining up concrete forms, pulling cables, opening box car doors, pulling link fencing, etc. THE LUG-ALL COMPANY, 331 E. LANCASTER AVE., WYNNEWOOD, PENNA.

(*Products continued on page* 108)

KNOW MY POP?

He's a wholesaler—and a good one, too. You should know him, for he's a valuable friend.

"He's 'got what it takes'—and you'll take what he's got because the things he has are exactly what you want—the best brands of products he can find for you.

"But you'll want to go to him not only for the products* you need, but now and then you'll seek his help in solving some of your problems. Take advantage of the extensive background of experience he has and draw on it.

"Yes, sir! Make no mistake; you'll always profit whenever you BUY FROM YOUR WHOLESALER."

WOLVERINE TUBE DIVISION
Calumet and Hecla Consolidated Copper Company
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Manufacturers of tubing exclusively
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UNI-BATCH
Cost Saving Equipment

Use With 6S to 16S Concrete Mixers—Inclusive

Charge bin with end loader having mechanical or hydraulic type bucket.

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Pull unibatch behind pick up truck.

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Used In 30 Different States

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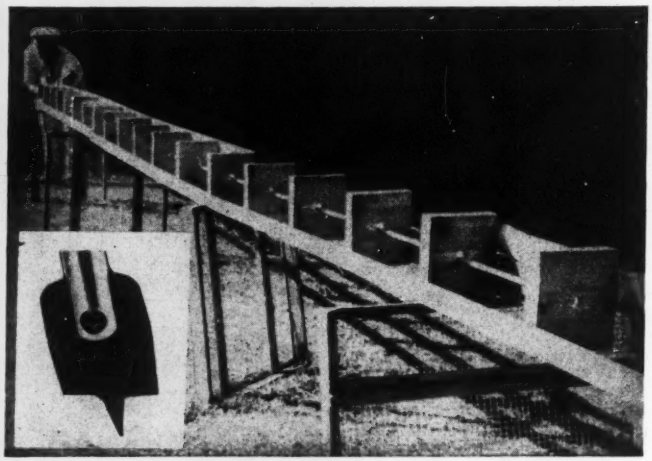
CARRIES ANYTHING GOES ANYWHERE

Countless applications! • Easy to steer. • Climbs 25% grade. • Turns in own length. • Speed 1 to 15 miles per hour. • Big tires for load and traction. • Brakes that HOLD. • Carries well over a ton. Hauls! Pulls! Pushes! • Uses quick interchangeable Box Body or Flat Rack. • Get a Getman and get more work done at more profit!

GETMAN BROTHERS
MANUFACTURING DIVISION
SOUTH HAVEN, MICHIGAN



Boring set, with ¼-in. drill, drives hole through 27 ft of joists

A new boring set and extensions, powered by a ¼-in. electric drill, can bore holes of from ⅜ to 1 in. diameters through 27 ft of joists or studding, or through 56 in. of solid wood. The set consists of a 5½-in. steel shaft and four tempered, blue spring-steel blades, sized 1 in., ⅞, ¾ and ⅝ in. diameter. An allen wrench permits easy blade changing without removing the shaft from the electric drill.

Each blade point has a front rake which also permits power drilling of holes in low melting point plastics. According to the manufacturer, tests at the shop laboratories of the University of Illinois show that the Time Saver bit takes ¼ to ½ less horsepower (because of less torque) than bits of similar construction.

Extensions in 6- or 12-in. lengths can be joined together to permit drilling through studding, floor joists, rafters or wherever deep holes are required. As many extensions as are needed can be added, with an allen set screw holding each one, without removing the bit from the work. TIME SAVER TOOLS, INC., MUNDELEIN, ILLINOIS.

Three-piece gear motor announced by G-E

A new gear motor, designed to simplify maintenance in case of electrical failure of the stator, has been announced by the General Electric Co.'s Small and Medium Motor Department. It has three parts: a G-E Tri-Clad motor, a planetary gear and a mechanical adapter. It is available in speed ratings of 780 to 13.5 rpm.

The mechanical adapter serves the triple function of acting as the pulley end-shield for the motor, the motor end-shield of the gear housing, and a mechanical spacer for easy accessibility to the stator frame bolts.

The motor is available in ratings of 1 to 75 hp for standard and up to 200 hp for special applications. GENERAL ELECTRIC COMPANY, SCHENECTADY 5, N. Y.

Rex-Rotary can run off two stencils at once

A new twin-cylinder stencil duplicator was recently announced, this time a double legal size machine. Its printing area is 17 x 13½ in.—it can handle paper in sizes up to 18½ x 15 in.—it can print two single legal or letter size sheets simultaneously—or two single sheets (note size to legal size) at the same time. All sizes are fed automatically as with its predecessor, Model D-270.

Other features which the manufacturer lists are: hairline registration through double-action synchronized paper feed; quick exchange of colors with no change of drums; automatic paper feed, reliable for all kinds of paper from air mail to card stock, and easy adjustment of height and margin. REX-ROTARY DISTRIBUTING CORP., 19 WEST 31ST STREET, NEW YORK 1, N. Y.

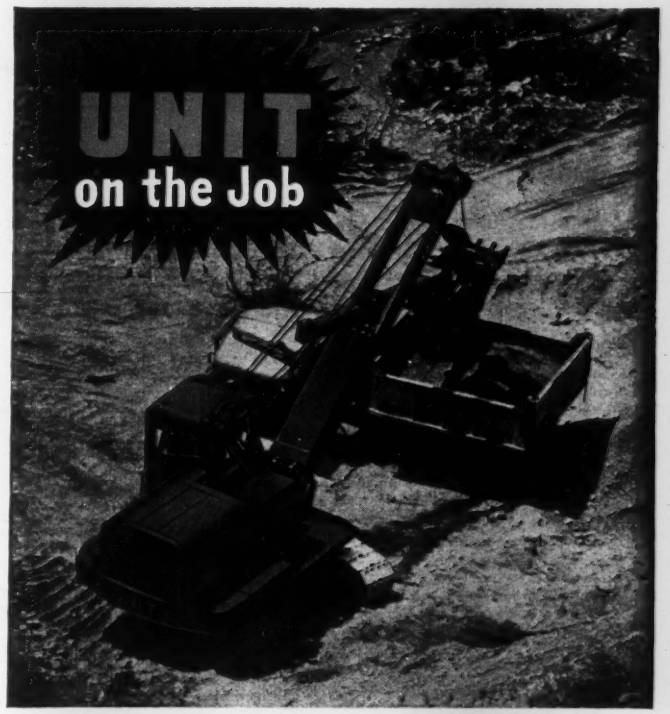
PUBLICATIONS

Explosion-Proof Motors – Construction details of Allis-Chalmers explosion-proof, fan-cooled and non-ventilated motors are described in a new bulletin released by the company. Type APZZ, available in ratings of 3 to 100 hp, are fan-cooled. Type APKK, non-ventilated units, are available in fractional rating hp from ½ to 2. Bulletin number is 51B7286A, and is available from ALLIS-CHALMERS MANUFACTURING CO., 1018 S. 70TH STREET, MILWAUKEE, WISCONSIN.

Exit and directional lighting—Thirty-one distinct types of signs, attractively illustrated and printed in two colors are featured in this 8-page catalog supplement. General specifications for edgelites, surface mounted units, surface mounted exit signs, recessed exit signs and moulded glass directional globes are listed in addition to specific information regarding face, letter height, overall lengths and height and fixture width. GRUBER BROS., INC., 125 SOUTH FIRST ST., BROOKLYN 11, N. Y.

Acid-Proof Materials and Construction—Three descriptive and technical bulletins are offered: (1) Bulletin No. 139 discusses Eonite pipe and fittings, made of furan resin material reinforced with laminations of chemical glass fabric cloth, for handling most mineral acids, alkalis, and organic solvents; (2) Bulletin No. 160 discusses the acid-proof construction of pickling and plating tanks; process tanks, vessels, and towers; pickling and plating basins; acid-proof floors. Structural work may be steel or concrete. Covering materials are Pyroflex lining, acid-proof cement. (3) Bulletin No. 190 discusses Eonite lacquer, a coating to protect interior or exterior surfaces from the corrosive effects of gases, vapors, mists, and liquids. This lacquer is furnished with black, gray, or metallic pigment. Installations are made by the company's field men or by customers' labor under Aqua-Therm supervision.—AQUA-THERM, INC., 37-73 N. TORRENCE ST., DAYTON 1, OHIO.

Surface Material Spreader—A new bulletin F-130 describing the Buckeye Model 5 Spreader highlights the following design and construction features: (1) controlled volume and rate of spread (uniform regardless of the truck speed) since the feed roll is powered by the spreader wheels; feed roll can also be adjusted to permit a tapered spread of material; (2) for



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PUBLICATIONS

longer life and dependable service the wheels are mounted on anti-friction bearings which reduce rolling friction. (3) Spiral agitator permits the spreading of damp sand. Built in three sizes, the No. 5 Spreader can be used for base-course spreads by using a strike-off attachment.—CUSTOMER SERVICE, GAR WOOD INDUSTRIES, INC., WAYNE, MICH.

Krane Kars—The reconstruction job on the famous old Brooklyn Bridge in New York City has included so many and varied uses of Krane Kars that the company has written up a four-page booklet describing some of the unusual and interesting uses. Included are tables on condensed specifications, hook clearances, reach and capacity charts for various boom length, and all types of extra equipment. On the bridge job the Kars have assisted in removal of the entire wood block flooring, tracks, ties, etc., and have unloaded and erected approximately 4,000 tons of structural steel and bridge gratings. They also have unloaded mats, steel reinforcing bars and structural steel.

Ask for Bulletin No. 79-A. SILENT HOIST AND CRANE CO., BROOKLYN 20, N. Y.

Wire rope splicer—A data sheet on the Torquemaster wire rope splicers contains illustrations that show how even an inexperienced worker can take advantage of this machine for wire rope splicing. The rig's ability to overcome cable torque through a resistance regulator and swivel-action jaws makes possible savings in splicing manhours up to 50% according to the sheet. QUAY INDUSTRIES, 100 BARR BUILDING, WASHINGTON, D. C.

Slip-on pipe fittings—A bulletin—No. 150—gives many uses, specifications and other data on NU-RAIL slip-on fittings. These are used in construction of permanent and temporary pipe structures, and are said to save 15 per cent on labor and as much as 30 per cent overall costs when compared to conventional threaded pipe and fittings. Made of corrosion-resistant aluminum alloy, there are five basic fittings, plus a floor and wall plan. Standard pipe comes in sizes from ¾ in. through 2 in. in aluminum, brass, galvanized or black steel, and may be used individually or in combination to make practically every conceivable type of fitting available, according to the booklet. THE HOLLANDER MFG. COMPANY, 3841 SPRING GROVE AVE., CINCINNATI 23, OHIO.

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EDITORIALS

Secret airbases

LAST WEEK the Department of Defense took the great airbase at Thule, Greenland, off the secret list—no doubt to the great amusement of the Russians who have known about it since its construction started eighteen months ago. During all that period the principal result of the secrecy classification has been to complicate the work of the engineers and contractors and to increase the cost of the job to the American taxpayer. Isn't it about time that once negotiations have been completed with a foreign country for the United States to build an airbase on its soil, that construction be carried on without the debilitating effect of the secrecy label?

The abortive effort at secrecy on the Moroccan airbases should be sufficient to teach a lasting lesson. Had the confusion and cost of the "crash" program of construction been open to public inspection at all times, it seems certain that remedial measures would have been taken long before they were. As it was, everybody from the State Department on down procrastinated in making the necessary decisions to cut the waste that always accompanies rush construction.

Had the facts been known, public opinion and congressional pressure could have forced the French to quit stalling on providing right-of-way and sites. Had the contractor, the architect-engineer, the Corps of Engineers, and the Air Force been free, publicly, to question or criticize the actions and decisions of one another—as they would on a non-secret job—some errors would not have happened and others would have been quickly corrected. But these conditions did not prevail, so that everyone has an alibi, and a meritorious one at that—conditions beyond his control.

Now we are in the process of attempting to fix the blame, but in a manner that offers little hope for avoiding waste in the future. Suppose the State Department and Military Intelligence did err in deciding that Russia was so nearly ready to invade Europe that we needed airbases in Morocco quickly and at any cost? Suppose General Pick did err in telling the Air Force that the bases could be built on the rush schedule demanded, or that he did not assign the proper or necessary personnel to supervise the work under such a rush program? Suppose the Air Force did vacillate in its choice of airbase sites? Suppose the consulting engineers selected were more expert in foundations and runway construction than in hangars and housing and thus had to be supplemented later with another firm? Suppose the Army Engineer in charge did permit departure from specifications on some of the fill material and pavement surfacing in an effort to complete the job on schedule? Suppose the contractors were not able at first to keep their records up to date, or allowed a pipe line crew to loaf for a time instead of sending it back to the States until the French made up their minds to release right-of-way?

All of these things have been charged. Proving them will not return a single dollar to the U.S. treasury. And, as stated, there could be an excuse for each that would be justifiable under the circumstances. The problem is what to do in the future to assure that foreign airbases and other military construction will be carried out with the greatest efficiency and economy possible. One thing that offers great promise is to put an end to the phony secret label that is hung on jobs that can't be kept secret.

No charges have yet been made that there was waste on the Greenland job. But if waste is to be measured by what a secret, rush job costs over what it would have cost if it could have proceeded in the open and at a reasonably normal pace, there was waste at Thule, too. And there was probably some less-than-perfect construction.

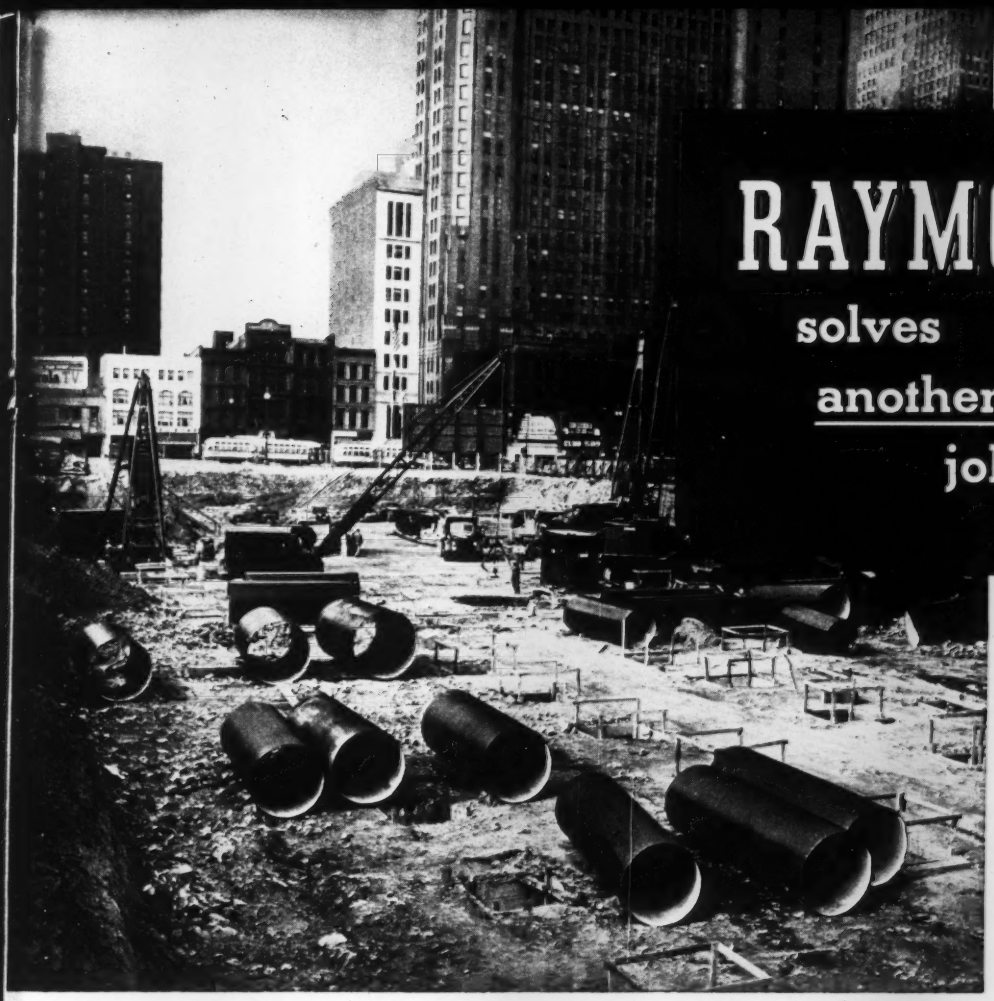
Someone has said, with respect to rush jobs, that "if you want them bad, you get them bad." If you also want them to be built in secret, they are apt to be worse, and certainly more costly.

Contractors in the middle

CONGRESS MUST FIND some way to solve its troubles with governmental departments which let contracts beyond the amount of funds granted them, and find it short of voiding the contract or requiring the contractor to return any payments made him. It is not the contractor's responsibility to determine whether a government agency is legally able to sign a particular contract with him. Yet that would seem to be implied in the Comptroller-General's ruling with respect to the Bureau of Reclamation overcommitting its authorization from Congress on the Eklutna hydro project in Alaska.

The fight—with contractors in the middle as innocent bystanders—is over whether Congressional authorizations are open-ended or not; that is, whether an agency can overcommit its authorization and then expect Congress to honor the increase with a supplemental authorization backed up by an appropriation. This has frequently been the practice in the past, but now it is declared to be illegal on the ground that within the last year some of the House committees have put definite spending limits on specific projects or on a group of related projects.

In tackling the problem Congress is making a laudable attempt to tighten its control of the nation's purse strings. Several kinds of legislation are being proposed, and the next Congress will probably be offered a bill to act upon. But one thing should be made certain—that contractors who enter into contracts with the federal government in good faith are protected and not penalized as they could be now.



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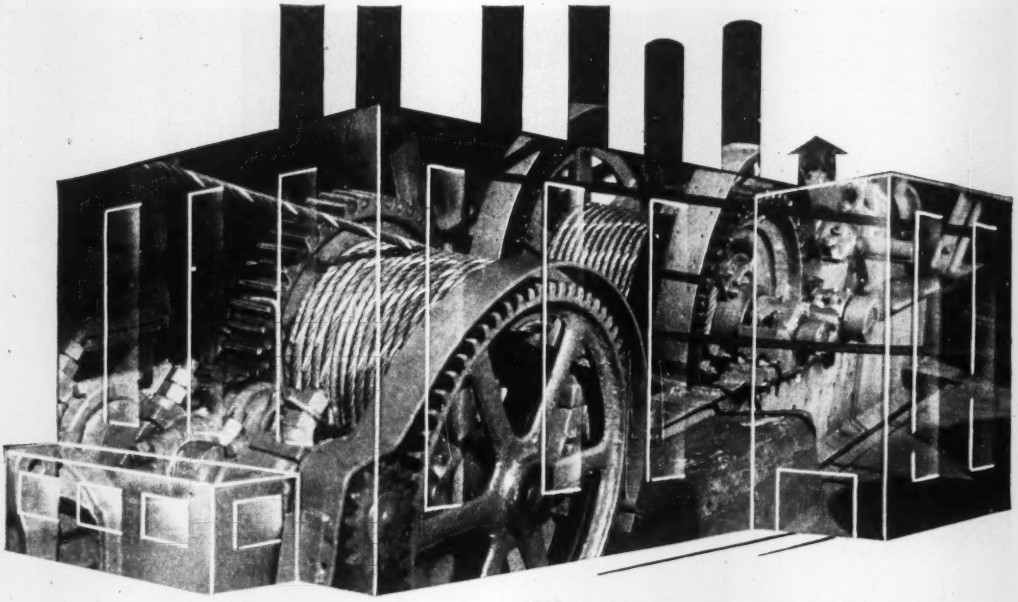

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